Manitoba
Energy and Mines
Geological Services

Mineral Deposit Series — Report No. 1

Mineral Deposits and Occurrences in the Flin Flon Area NTS 63K/13: Part I, Mikanagan Lake Area (63K/13SE)

by G.H. Gale and D.R. Eccles

Winnipeg, 1988

Energy and Mines

Hon. Jerry Storie
Minister

Charles Kang
Deputy Minister

Minerals Division

Sobharam Singh
Assistant Deputy Minister

Geological Services

W.D. McRitchie
Director

TABLE OF CONTENTS

Page

INTRODUCTION . . . 1

  Methodology . . . 1

  Format of mineral deposit maps . . . 1

  Format of mineral deposit reports . . . 2

GENERAL GEOLOGY OF AREA 63K/13SE . . . 3

REFERENCES . . . 4

Location 3 (North Star Mine) . . . 5

Location 4 (Don Jon Mine) . . . 9

Location 5 (Pinebay Mine) . . . 11

Location 6 (Baker Patton) . . . 15

Location 7 (Amulet) . . . 20

Location 8 (Whitefish) . . . 23

Location 9 . . . 27

Location 10 . . . 29

Location 11 (Leo Lake) . . . 31

Location 12 . . . 35

Location 13 . . . 37

Location 14 . . . 38

Location 15 (Wally) . . . 40

Location 16 (Alberts Lake) . . . 43

Location 17 . . . 45

Location 18 . . . 46

Location 19 . . . 48

Location 20 . . . 50

Location 21 . . . 52

Location 22 . . . 54

Location 23 (Cabin Zone) . . . 56

Location 24 . . . 58

Location 25 . . . 59

Location 26 (X.L.) . . . 61

Location 27 (Hot Shot) . . . 63

Location 28 . . . 64

Location 29 . . . 67

Location 30 . . . 68

Location 31 (Muskoka) . . . 71

Location 32 . . . 73

Location 33 . . . 75

Location 34 . . . 76

Location 35 (Ruby Lake) . . . 81

Page
Location 50 85
Location 51 ("Sulphide Lake") 87
Location 78 88
Location 85 91
Location 86 93
Location 88 95
Location 89 97
Location 98 98
Location 99 99
Location 100 101
Location 101 103
Location 102 105
Location 103 (Tartan Lake Mine) 107
Location 104 111
Location 105 113
Location 106 115
Location 107 116
Location 108 117
Location 117 119
Location 118 121
Location 119 122
Location 120 123
Location 121 125
Location 122 126
Location 123 129
Location 124 131
APPENDIX A: AIRPHOTO LOCATION OF OCCURRENCES (LOCATIONS 8 AND 20) . . . 132

FIGURES

Figure 3-1: Distribution of mineral occurrences in the Baker Patton felsic complex 6
Figure 3-2: Geology of the Thompson Lake area 7
Figure 3-3: Geology of the North Star Deposit (150 foot level) 8
Figure 3-4: Longitudinal section of the North Star deposit 8
Figure 4-1: General geology of the Don Jon Deposit 9
Figure 4-2: Plan of the 500 foot level, Don Jon Deposit 10
Figure 5-1: Geological setting of the Pinebay Deposit 12
Figure 5-2: Simplified 600 foot level plan of Pinebay Mine 13
Figure 5-3: Pinebay Mine cross-section showing solid sulphide zones A, B, C and D . . . 14
Figure 6-1: Felsic volcanic rocks of the Baker Patton area, and location of sulphide-rich zones 16
Figure 6-2: Sulphide distribution and alteration in the Baker Patton area 17

Page
Figure 6-3: Drill hole locations at the Baker Patton Deposit 19
Figure 7-1: Geological setting of occurrence #7 21
Figure 8-1: Geological setting of occurrence #8 23
Figure 8-2: Schematic sketch of relationship between A.L. Parres trench and fault zone . 24
Figure 8-3: Distribution of Cu (ppm) and Mo (ppm) in the Whitefish Lake porphyry 25
Figure 9-1: Pyrite occurrence, east shore of Whitefish Lake 27
Figure 9-2: Geological setting of occurrence #9 28
Figure 10-1: Geological setting of the Birch Bay area 29
Figure 10-2: Alteration in the Birch Bay area 30
Figure 11-1: Geology of the Leo Lake occurrence 32
Figure 11-2: Location of holes drilled by H.B.E.D. at occurrence #11 33
Figure 11-3: Location of holes drilled by God's Lake Mines Ltd. at occurrence #11 . . . 34
Figure 12-1: Geological setting of occurrences #12 and #13 36
Figure 13-1: Detailed geology, and drill hole locations at occurrence #13 37
Figure 14-1: Geological setting of occurrence #14 38
Figure 14-2: Detailed geology, and trench locations at occurrence #14 39
Figure 15-1: Geological setting of occurrence #15 41
Figure 15-2: Detailed geology, and trench locations at occurrence #15 42
Figure 16-1: Geological setting of occurrences #16 and #17 44
Figure 18-1: Geological setting of occurrence #18 47
Figure 19-1: Geological setting of occurrence #19 49
Figure 19-2: Detailed geology, and trench locations at occurrence #19 49
Figure 20-1: Geological setting of occurrence #20 51
Figure 21-1: Geological setting of occurrence #21 53
Figure 22-1: Drill hole and trench locations at occurrence #22 55
Figure 23-1: Drill hole locations at the Cabin Zone 56
Figure 23-2: Longitudinal section of the sulphide mineralization at the Cabin Zone 57
Figure 24-1: Drill hole and trench locations at occurrence #24 58
Figure 25-1: Geological setting of occurrence #25 60
Figure 26-1: Geological setting of occurrence #26 62
Figure 27-1: Detailed geology, and trench locations at occurrence #27 63
Figure 28-1: Detailed geology, and trench locations at occurrence #28 65
Figure 29-1: Geological setting of occurrence #29 66
Figure 29-2: Trench and sample locations at occurrence #29 67
Figure 30-1: Geological setting of occurrence #30 68
Figure 30-2: Geochemical data, trench and sample locations at occurrence #30 69
Figure 31-1: General geology, and trench locations at occurrence #31 70
Figure 31-2: Detailed geology, and trench locations at occurrence #31 71
Figure 32-1: Geological setting of occurrence #32 72
Figure 32-2: Geochemical data, trench locations at occurrence #32 73
Figure 33-1: Geological setting of occurrence #33 74

Page
Figure 34-1: Geological setting of occurrence #34 78
Figure 34-2: Trench locations on the Monica 2 claim 80
Figure 35-1: Geological setting of the Ruby Lake occurrence 82
Figure 35-2: Detailed geology, and trench locations at occurrence #35 83
Figure 50-1: Geological setting of occurrence #50 84
Figure 51-1: Geological setting of occurrence #51 86
Figure 78-1: Geological setting of occurrence #78 89
Figure 78-2: Mikanagan Mining Company Limited drill hole locations 90
Figure 78-3: Detailed geology and pit locations at occurrence #78 90
Figure 85-1: Geological setting of occurrence #85 92
Figure 86-1: Geological setting of occurrence #86 94
Figure 88-1: Geological setting of occurrence #88 95
Figure 89-1: Geological setting of occurrence #89 96
Figure 98-1: Geological setting of occurrence #98. 98
Figure 99-1: Geological setting of occurrence #99 100
Figure 100-1: Geological setting of occurrence #100 102
Figure 101-1: Geological setting of occurrence #101 104
Figure 102-1: Geological setting of occurrence #102 106
Figure 103-1: Geological setting of the Tartan Lake Deposit 108
Figure 103-2: Cross-section of the Tartan Lake Deposit 110
Figure 104-1: Geological setting of occurrence #104 112
Figure 105-1: Geological setting of occurrences #105, 106, 107 and 108 114
Figure 107-1: Drill hole locations at occurrence #107 116
Figure 117-1: Geological setting of occurrence #117 118
Figure 118-1: Geological setting of occurrence #118 120
Figure 120-1: Geological setting of occurrences #120 and #121 124
Figure 122-1: Geology and trench locations at occurrence #122 127
Figure 123-1: Geological setting of occurrence #123 128
Figure 124-1: Geological setting of occurrence #124 130

TABLES

Table 8-1: Gold, copper and molybdenum analyses of samples collected from Whitefish Lake 24
Table 19-1: Geochemical analyses at occurrence #19 48
Table 34-1: Gold assays from Nesnah Mining and Exploration Company Limited 77

MAP

Map MDS87-1: Mineral Deposits and Occurrences in the Mikanagan Lake area (63K/13 SE), Manitoba . . . . (in pocket)

INTRODUCTION

This report and accompanying map (MDS87-1) are part of a Mineral Deposit Series presenting a uniformly organized and up-to-date collation and analysis of information on mineral occurrences in the Province of Manitoba. The series is intended: (1) to provide explorationists with a geoscientific data base that can be used in mineral exploration; and (2) to provide a technical data base for other government users in resource evaluations, formulation of mineral and land use policies and the initiation of regional development programs.

METHODOLOGY

The documentation program was initiated in the main mining districts of the province under the 1984-1989 Mineral Development Agreement. Under this project mineral deposit geologists of the Geological Services Branch have attempted to inspect and evaluate each known mineral occurrence. These site visits ranged from a preliminary half day or less search of an area for old workings, to extensive geological mapping of selected occurrences for a week or more. Although a small number of occurrences were not located or were not visited, generally more than 95% were located and examined during this initial phase of the documentation.

In addition, for each occurrence the geologists have attempted to synthesize available data from published and unpublished sources. The Manitoba Mineral Inventory Card Index and the cancelled Assessment Files have been used extensively in the preparation of the report.

The information has been collated and maps prepared with the assistance of junior staff geologists and summer assistants. Senior mineral deposit geologists have provided the deposit classifications and text for the report.

Deposit versus Occurrence

Throughout this report mineralization is referred to as a *deposit* if tonnage and grade figures are known; all other mineralization is referred to as an *occurrence*. No attempt has been made to set lower limits for deposit sizes.

Massive Sulphide versus Solid Sulphide

The use of 'massive sulphide' in the geological literature is confusing in that it is not always clear whether the authors are referring to a 'massive sulphide deposit' (cf. Sangster, 1972) or a section of sulphide-rich rock. In this publication 'massive sulphide' will be used in reference to a *deposit type*, i.e. a volcanogenic massive sulphide deposit type, rather than the nature of the mineralization. A volcanogenic or sedimentogenic massive sulphide deposit can contain a sulphide lens that locally contains as little as 10% sulphide minerals by volume and the alteration zones that are an integral part of many sulphide deposits, or the only portion remaining, rarely contain more than 50% sulphide minerals. Consequently, the use of 'solid sulphide' for 75% - 100% and 'near solid sulphide' for 50% - 75% sulphide minerals is adopted in place of the commonly used term 'massive' to describe the textural aspects of a sulphide mineralization.

FORMAT OF MINERAL DEPOSIT MAPS

Location:

One of the incentives spurring the mineral deposit documentation was the absence of accurate location maps for known mineral occurrences. Inaccurate land bases have previously resulted in failure to find old workings, surveys conducted in the wrong areas, and even cancellation of intended surveys by explorationists. Consequently, considerable field time has been spent in establishing occurrence locations and attempts have been made to display exact locations both on the map and in the accompanying report.

The location number on the map is a unique reference number that will be used both in the report and the geologists' unpublished data base. These numbers are consecutive within each 1:50 000 NTS map sheet (but not within portions of a map sheet such as Map MDS87-1).

Deposit Types:

In order to maintain a mineral deposit classification, which will be useful to both explorationists and metallogeneticists, a simplified descriptive classification was selected. This classification is based on the use of common *deposit types* for the classification of both deposits and occurrences. The classification of mineralization is based on the premise that the mineral explorationist requires information on metals and types of mineralization in an area as well as on the *economic* deposits (past, present and future producers).

All deposits and occurrences are classified according to the Deposit Type classification in Table 1.

TABLE 1. MINERAL DEPOSIT TYPES

STRATABOUND MASSIVE SULPHIDE TYPE DEPOSITS
- a) Volcanic rock-associated
- b) Sedimentary rock-associated
- c) Alteration zone associated with a or b

CHEMICAL SEDIMENT TYPE DEPOSITS
- a) Sulphide facies iron formation
- b) Oxide facies iron formation
- c) Carbonate facies iron formation
- d) Silicate facies iron formation
- e) Other chemical sediments

VEIN TYPE DEPOSITS
- a) Single vein
- b) Multiple veins or lenses
- c) Stockwork

MAGMATOGENIC TYPE DEPOSITS ASSOCIATED WITH MAFIC/ULTRAMAFIC ROCKS
- a) Disseminated
- b) Layered
- c) Net textured
- d) Podiform

DEPOSITS WITH PORPHYRY AFFINITIES
PEGMATITE TYPE DEPOSITS
CLASTIC SEDIMENT TYPE DEPOSITS
NOT CLASSIFIED DEPOSITS

The deposit type displayed on the map represents the mineralization with the greatest economic potential, for example a disseminated narrow chalcopyrite layer is emphasized rather than a much thicker solid pyrite-graphite layer.

Mineralization:

A symbol is used to denote the percentage and/or type of mineralization present. At some localities more than one type of mineralization is present. The type of mineralization displayed in the symbol represents the mineralization with the greatest economic potential as indicated by the deposit type symbol.

Host Rocks:

In general, this description refers to the immediately underlying and overlying rock types. When a number of rock types are present in an extensive zone of mineralization, the most common rock types are indicated.

Elements:

This description allows for a maximum of three metals present in increasing order of abundance by volume. The precious and base metals are indicated, if present, in preference to elements such as iron and carbon.

In some instances it has been more efficient on the map and in the report to make reference to an area of mineralization rather than individual deposits or occurrences. All mineralization in the area delineated by a dotted line on the map is referenced in the report under the location number within that area.

FORMAT OF MINERAL DEPOSIT REPORTS

Location:

Each deposit or occurrence description will contain the unique deposit reference number, deposit or claim name where applicable, UTM coordinates, general area description, the reference number of the airphoto on which the deposit can be located and a brief description of method(s) of access. For those localities that were difficult to locate in the field the airphotos with locations are reproduced in appendix A.

Exploration History:

This section provides an idea of the extent of exploration. In general, it is a precis of the Mineral Inventory Card and the reader should reference the Mineral Inventory Card for further details.

Geological Setting:

In this section the general geology of a deposit or occurrence is described. The information levels of the descriptions vary considerably and depend largely upon the extent of geological mapping during the documentation project. For further details the reader should consult the references cited.

Mineralization:

A detailed description of the mineralization provides the readers with the opportunity to make their own evaluation of the significance of a mineral occurrence or deposit.

Geochemistry:

Assay and geochemical data are included in this section. Extensive geochemical data bases are referenced but not reproduced here.

Classification:

In this section the geologist may indicate the reasons for the classification appearing on the Mineral Deposit Map. For those localities containing more than one deposit type, the deposit types not shown on the map are documented here.

References:

These include both published and unpublished sources. For published and assessment report information the reader should obtain desired material directly from the source. The mineral deposit geologists will endeavour to supply copies of unpublished material on a deposit by deposit basis.

GENERAL GEOLOGY OF AREA 63K/13SE

The geological base for the mineral deposit map sheet 63K/13SE is based on the one inch to one mile map of Bateman and Harrison (1945) and the 1:20 000 scale map of Bailes and Syme (1987), which covers the westernmost part of the map area. The area is underlain by volcano-sedimentary rocks of the Amisk Group and clastic sedimentary rocks of the Missi Group that have been intruded by pyroxenitic to granodioritic rocks. The Amisk Group consists predominantly of basaltic to andesitic flows and volcaniclastic rocks and felsic volcanic rocks of Proterozoic age (1886 ± 1.3 Ma., Syme et al., 1987). These are the main host rocks to mineralization in the Flin Flon area. The Missi Group metasedimentary rocks are fine- to very coarse-grained fluviatile sandstones and conglomerates that were derived in part from and deposited unconformably upon the Amisk Group rocks.

One of the largest felsic volcanic complexes in the Flin Flon area, the 'Baker Patton felsic complex' (Bailes and Syme, 1987), occurs partly within the map area. This complex, consisting predominantly of rhyolitic to dacitic pyroclastic rocks and flows, is host to a number of volcanogenic massive sulphide type Cu-Zn deposits and extensive zones of alteration (e.g. Pinebay Mine #5*, Baker Patton #6, North Star Mine #3, Leo Lake #1). Smaller units of felsic volcanic rocks delineated by Bailes and Syme (1987) and Bateman and Harrison (1945) are also associated with sulphide mineralization (e.g. Bear Lake area).

A number of mineral deposits and occurrences are located in proximity to or within intrusive rocks; for example, the Whitefish Lake quartz monzodiorite, the Mikanagan Lake gabbroic sill and the Alberts Lake gabbroic intrusion.

The Mikanagan Lake sill is a layered body that ranges in composition from gabbro to leuco-tonalite (Bailes and Syme, 1987) and appears to be related to the Tartan Lake gabbro complex (Peloquin and Gale, 1985). The Alberts Lake gabbroic intrusion, not yet mapped in detail, appears locally to be quite similar to the Tartan Lake gabbro complex. Two gold deposits (the Tartan Lake Mine and the Alberts Lake zone) and a large number of occurrences are associated with these gabbroic intrusions. The metallogenetic influence of these gabbros are unknown. The deposits and a number of the occurrences are also associated with quartz vein systems in volcanic rocks and fault zones adjacent to the intrusions (Gale and Ferreira, 1987). Further detailed studies are required to establish if these mafic intrusions represent source rocks, chemical traps or heat sources for the mineralizing events.

The Whitefish Lake quartz monzodiorite contains anomalous chalcopyrite and molybdenum mineralization that resembles porphyry-type mineralization (Baldwin, 1980). A fault zone through this intrusion has provided a locus for the concentration of copper and molybdenum (occurrence #8).

Although a number of major fault zones in the area were outlined by Bateman and Harrison (1945), Bailes and Syme (1987) established the presence of a large number of previously unrecognized faults that control major lithologic and stratigraphic blocks.

Faults and shears are prevalent at the Tartan Lake Mine and the Alberts Lake gold zone, and at a large number of gold occurrences within the map area. Studies at Tartan Lake and a number of other gold occurrences in the map area indicate that the observed faults postdate the alteration and mineralization; however, earlier structural features probably controlled the deposition of the mineralization. At other localities, e.g. Alberts Lake area, the gold mineralization and quartz veins appear to be related to fault systems. It is uncertain at this time which, if any, of the fault zones served as conduits for mineralizing fluids instead of simply having deformed and mobilized a pre-existing mineralization.

The Mineral Deposit report and the accompanying map are intended to be active documents that can be updated as new information becomes available. Although revisions of the publication are anticipated, any additional unpublished information may be obtained by contacting the authors or the Director, Geological Services Branch.

---

*Mineral location reference number for Mineral Deposit Report and Map

REFERENCES

Baldwin, D.A.
1980: Porphyritic intrusions and related mineralization in the Flin Flon volcanic belt; Manitoba Energy and Mines, Mineral Resources Division, Economic Geology Report ER79-4.

Bailes, A.H., and Lamb, C.
1977: Geology of the Pine Bay Area; unpublished geological map, Geological Services Branch, Manitoba Energy and Mines.

Bailes A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

Bateman, J.D.
1945: Gold Deposits East of Flin Flon; Geological Survey of Canada, Paper 45-12 and the Precambrian, June 1945, p. 8.

Bateman, J.D. and Harrison, J.M.
1944: Mikanagan Lake Map Descriptive Notes; Geological Survey of Canada, Ottawa, Paper 44-22.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

Dix, W.F.
1948: Geology of the Baker, Cabin and Geo claims, 1:2400 geological map; Assessment Report 98684, Manitoba Energy and Mines, Minerals Division.

England, D.
1979: Petrology and chemistry of the volcanic rocks associated with the North Star copper deposit; unpublished B.Sc. thesis, University of Waterloo, 94 p.

Ferreira, K.
1987: Geology of the Leo Lake area; In Manitoba Energy and Mines, Report of Field Activities 1987, p. 84-86.

Gale, G.H. and Ferreira, K.
(In prep.): The geological setting of the Tartan Lake Mine; Manitoba Energy and Mines, Open File Report OF87-8.

Geological Staff of the Hudson Bay Mining and Smelting Co. Ltd.
1957: North Star and Don Jon Mines, Cuprus Mine, Schist Lake Mine; In Structural Geology of Canadian Ore Deposits, Volume II, Canadian Institute of Mining and Metallurgy, p. 247-262.

Mwanang'Onze, E.H.B.
1978: Stratigraphy and petrochemistry of the host rocks of copper-zinc deposits in the Flin Flon-Snow Lake greenstone belt; unpublished Ph.D. thesis, University of Manitoba.

Peloquin, S. and Gale, G.H.
1985: Geological Setting of the Tartan Lake Gold Deposits; In Manitoba Energy and Mines, Geological Services Branch, Report of Field Activities 1985, p. 71-73.

Peloquin, S., Tannahill, B., and Gale, G.H.
1986: Geology of the Tartan Lake Gold Deposits; In Manitoba Energy and Mines, Geological Services Branch, Report of Field Activities, 1986, p. 56-64.

Sangster, D.F.
1972: Precambrian volcanogenic massive sulphide deposits in Canada: A review; Geological Survey of Canada, Paper 72-22, 44 p.

Tannahill, B. and Gale, G.H.
1986: Geology of the Baker Patton area; In Report of Field Activities, Manitoba Geological Services Branch, p. 65-67.

Tanton, T.L.,
1941: Flin Flon Map 632A; one inch to one mile; Geological Survey of Canada, Ottawa.

Wright, J.F.
1938: Geology and mineral deposits of a part of Northwest Manitoba; Geological Survey of Canada, Summary Report 1930, Part C, p. 51-52.

Wright, J.F. and Stockwell, C.H.
1934: Gold occurrences of the Flin Flon District; Geological Survey of Canada, Summary Report 1933, Pt. C, p. 8-10.

LOCATION: 3 NAME: NORTH STAR MINE

UTM: 6071374N 334021E AREA: Thompson Lake AIRPHOTO: A26328-14

ACCESS:

Via North Star Road from Highway 10A.

HISTORY OF EXPLORATION:

The property, originally staked in 1919 by David Collins, was restaked in 1922 and 1929 by A.L. Stewart who made a number of small trenches and pits. The claims were allowed to lapse in 1935, and were later owned partly by W. Govin (1938-1945), R.A. McCallan (1938-1947) and R.D. Miller (1947). Hudson Bay Exploration and Development (H.B.E.D.) optioned the property and discovered the orebody by diamond drilling during 1949-1951. A shaft was sunk to 303 m in 1951-1952 and the deposit developed during 1953-1954. The deposit was mined out in 1958 (cf. Mineral Inventory Card 63K/13 Cu5)

GEOLOGICAL SETTING:

The area is underlain predominantly by rhyolitic and dacitic volcanic rocks that form part of an extensive felsic volcanic pile extending southwards from Alberts Lake to at least the south end of Sourdough Bay (Fig. 3-1). The area has been mapped at a scale of one inch to one mile by Bateman and Harrison (1945) and at a scale of 1:2400 by Dix (1948).

The general geology of the area is shown in Figure 3-2. Preliminary investigations have shown the need for detailed outcrop maps to establish the relationship, if any, between the North Star and Don Jon copper deposits. Our present understanding of the geology of the area suggests that the two deposits do not occur at the same stratigraphic level.

The presence of visible alteration on the shoreline of the island immediately east of the North Star deposit suggests that the stratigraphic tops are towards the west. This conclusion is supported by the presence of a "sulphide-filled fracture" zone (i.e. alteration and stringer ore) on the east side of the massive sulphide zone (Fig. 3-3).

The footwall rocks to the North Star deposit exposed on the island east of the deposit include a pillowed andesitic flow and a pumiceous rhyodacitic flow. The rocks exposed in the vicinity of the shaft on the west side of the deposit consist of a number of rhyolitic flows that include microbreccias, lava lobes and minor breccia. A unit of quartz porphyry was delineated on the west side of the orebody by underground drilling (Fig. 3-2 and 3-3).

MINERALIZATION:

The mineralization of the deposit is described by the Geological Staff of the Hudson Bay Mining & Smelting Co. Ltd. (1957) (hereafter referenced as: Geological Staff, 1957) and this account is extracted entirely from that report. The sulphide orebody is enclosed within a zone of "cherty chlorite schist". The orebody consists of a solid sulphide lens and a zone of irregular sulphide-filled fractures that are interpreted to be deformed footwall stringer ore. The orebody; extended from the bottom of the lake to the 140 m level, had a maximum width of 75 m and an average thickness of 6 m. A number of smaller zones of stringer sulphides with thicknesses of up to 4.5 m were located southeast of the orebody; however, no known solid sulphide lenses were found associated with this alteration zone material (Fig. 3-4).

Pyrite and chalcopyrite were the main sulphide minerals present. Quartz, chlorite and carbonate were the main gangue minerals. The massive sulphide lens was banded in part; however, there is no record of metal zonation even though a small lens of pyrite occurred at the south end of the orebody.

Further exploration of this deposit is dependent to some extent on the origins of the "quartz porphyry" (Fig. 3-2 and 3-3). If this is an intrusive rock (dyke) then solid sulphide lenses may occur at its west margin. If the "quartz porphyry" is a volcanic flow rock then exploration can be directed along strike and downdip from the known mineralization as well as at higher stratigraphic levels (i.e. westwards) for zinc-rich sulphide mineralization.

GEOCHEMISTRY:

241,643 tonnes of ore with a grade of 6.11% Cu were mined in the period 1954-1958.

The gold contents of the ore ranged from 0.41 g/tonne in 1954 to 0.27 g/tonne in 1958 and silver from 10 g/tonne in 1954 and 6.8 g/tonnne in 1958 (Mineral Inventory Card 63K/13 Cu5). The higher precious metal content in the earlier years of the mine probably represents higher gold and silver concentrations in the solid sulphide lens than in the stringer ore.

England (1979) provided 12 whole rock and partial trace element analyses from the vicinity of the North Star deposit. The SiO_2 contents ranged from 55.55% to 72.59%. Only two of the four analyses from the island on the east side of the deposit contain less than 1% Na_2O. Furthermore there appears to be a K_2O increase with decreasing Na_2O.

CLASSIFICATION:

This deposit is a typical massive sulphide type deposit with both a solid sulphide lens and a stratigraphically underlying zone of alteration and "stringer ore". The stringer ore probably represents mobilization of sulphide from veins and disseminations into very late fractures during deformation and metamorphism.

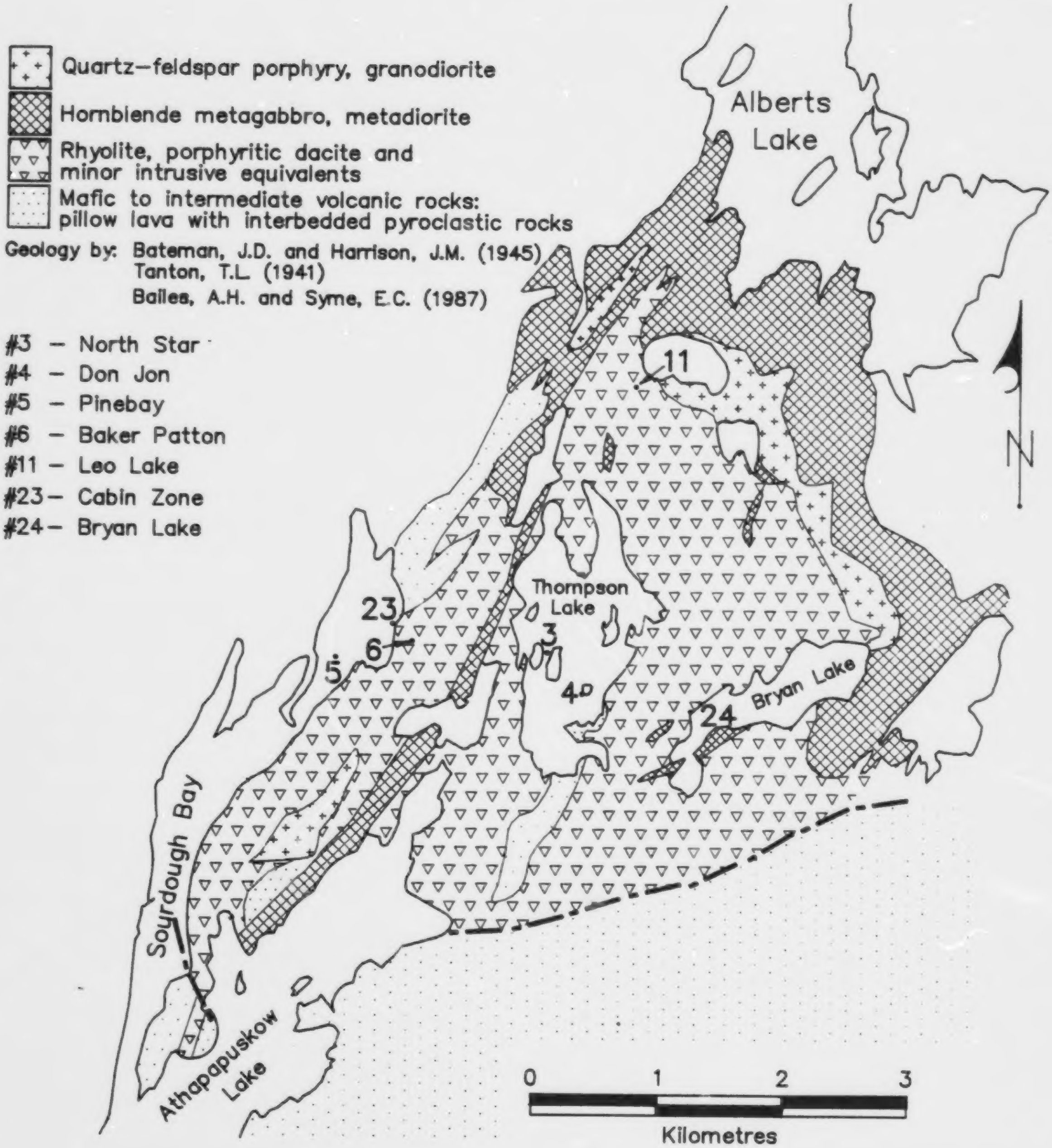

Quartz–feldspar porphyry, granodiorite
Hornblende metagabbro, metadiorite
Rhyolite, porphyritic dacite and minor intrusive equivalents
Mafic to intermediate volcanic rocks: pillow lava with interbedded pyroclastic rocks
Geology by: Bateman, J.D. and Harrison, J.M. (1945)
Tanton, T.L. (1941)
Bailes, A.H. and Syme, E.C. (1987)
#3 – North Star
#4 – Don Jon
#5 – Pinebay
#6 – Baker Patton
#11 – Leo Lake
#23 – Cabin Zone
#24 – Bryan Lake
Alberts Lake
11
N
Thompson Lake
23
6
5
3
4
24
Bryan Lake
Sourdough Bay
Athapapuskow Lake
0
1
2
3
Kilometres

Figure 3-1: Distribution of mineral occurrences in the Baker Patton felsic complex.

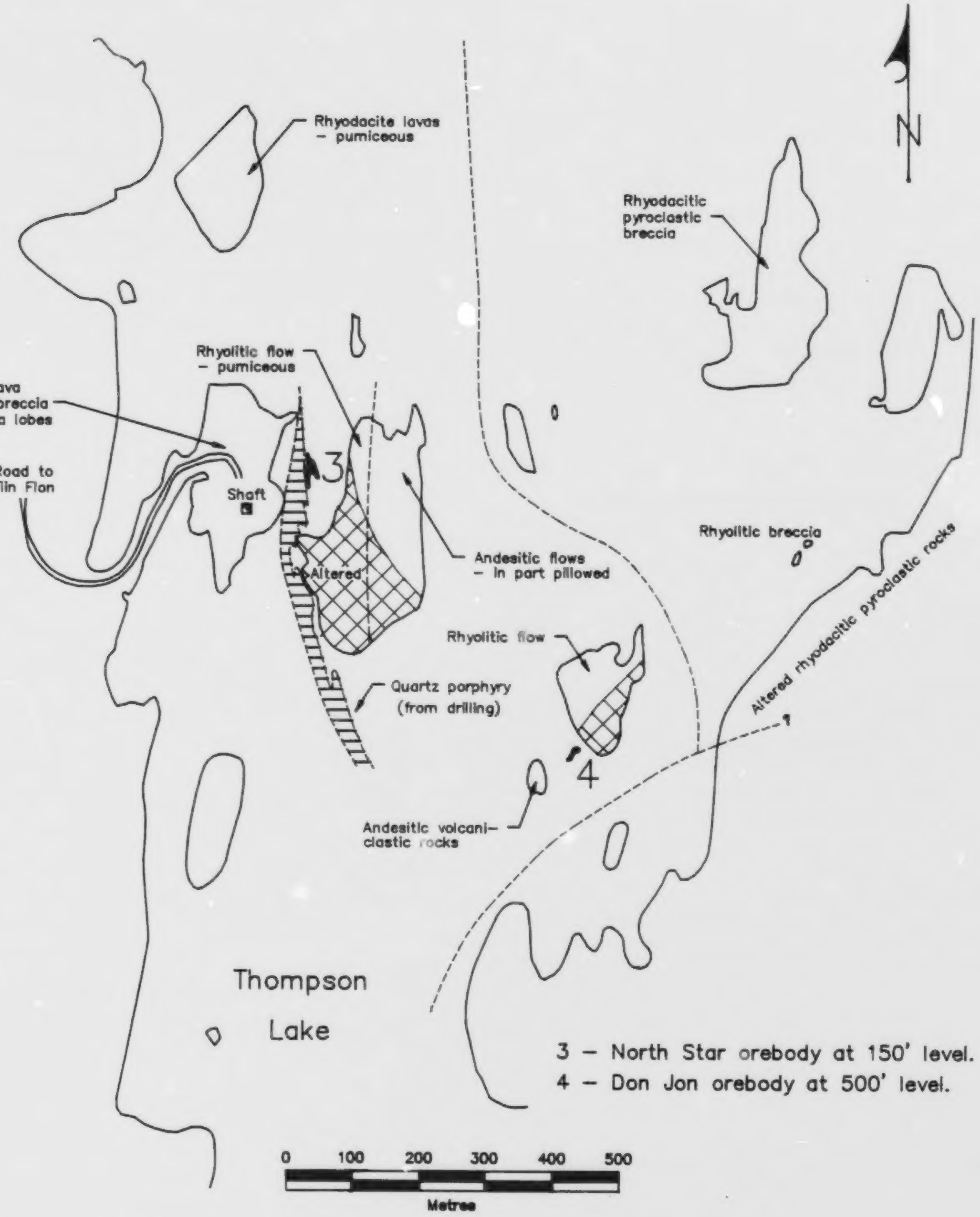
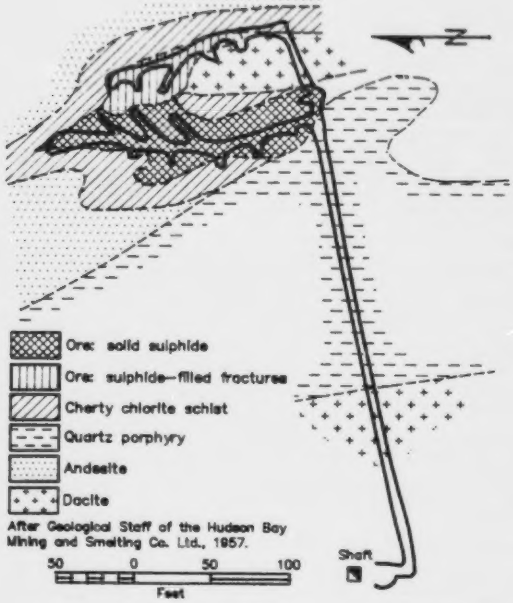
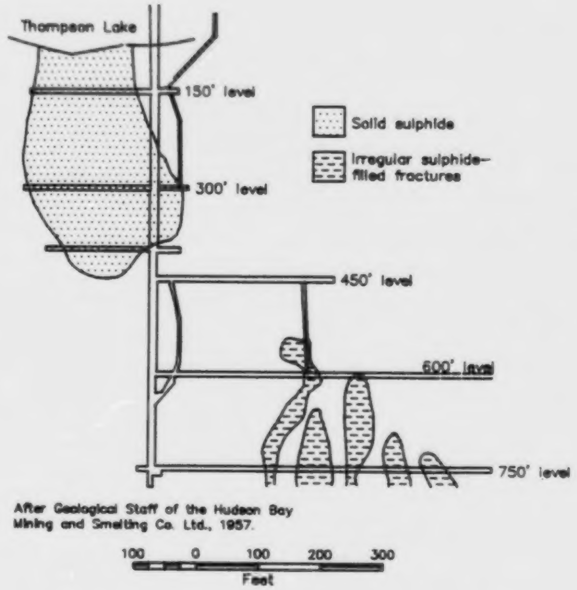

N
Rhyodacite lavas
- pumiceous
Rhyodacitic
pyroclastic
breccia
Rhyolitic flow
- pumiceous
Rhyolitic lava
- micro-breccia
and lava lobes
Road to
Flin Flon
Shaft
3
Altered
Andesitic flows
- in part pillowed
Rhyolitic breccia
Altered rhyodacitic pyroclastic rocks
Rhyolitic flow
Quartz porphyry
(from drilling)
4
Andesitic volcani-
clastic rocks
Thompson
Lake
3 - North Star orebody at 150' level.
4 - Don Jon orebody at 500' level.
0
100
200
300
400
500
Metres

Figure 3-2: Geology of the Thompson Lake area. Modified after Dix (1948), England (1979), and Geological Staff H.B.M.&S


N
Ore: solid sulphide
Ore: sulphide—filled fractures
Cherty chlorite schist
Quartz porphyry
Andesite
Dacite
Shaft
50
0
50
100
Feet

After Geological Staff of the Hudson Bay Mining and Smelting Co. Ltd., 1957.

Figure 3–3: Geology of the North Star Deposit. (Plan of the 150' level)


Thompson Lake
150' level
300' level
450' level
600' level
750' level
Solid sulphide
Irregular sulphide-filled fractures
100
0
100
200
300
Feet

After Geological Staff of the Hudson Bay Mining and Smelting Co. Ltd., 1957.

Figure 3–4: Longitudinal section (looking east) of the North Star Deposit.

REFERENCES:

Bailes, A.H. and Syme, E.C.

1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

Bateman, J.D. and Harrison, J.M.

1945: Mikanagan Lake, Map 832A, one inch equals one mile; Geological Survey of Canada, Ottawa.

Dix, W.F.D.

1948: Geology of the Baker, Cabin and Geo claims, 1:2400, geological map; Manitoba Energy and Mines, Assessment Report 98684.

England, D.

1979: Petrology and chemistry of the volcanic rocks associated with the North Star copper deposit; unpublished, B.Sc thesis, University of Manitoba, 94 p.

Geological Staff of the Hudson Bay Mining and Smelting Co. Ltd.

1957 North Star and Don Jon Mines, Cuprus Mine, Schist lake Mine; in Structural Geology of Canadian Ore Deposits, Volume II, Canadian Institute of Mining and Metallurgy, p. 247-262.

Mineral Inventory Card 63K/13 Cu5

Manitoba of Energy and Mines, Minerals Division.

Tanton, T.L.

1941: Flin Flon Map 632A; one inch equals on mile; Geological Survey of Canada, Ottawa.

LOCATION: 4 NAME: DON JON MINE

UTM: 6071003N 334401E AREA: Thompson Lake AIRPHOTO: A26328-14 and A26398-65

ACCESS:

Via North Star Road and boat.

HISTORY OF EXPLORATION:

The Don Jon claim was initially staked by W.E. Baker in 1919. Between 1920 and 1925 a number of trenches were dug on the property. The property ownership changed a number of times between 1925 and 1951 when the property was assigned to Don Jon Mines Ltd. (cf. Mineral Inventory Card). In 1928 Flintoba Mines removed approximately 25 cubic metres of rock and completed 850 m of diamond drilling. After optioning the property in 1948, H.B.E.D. outlined two small orebodies

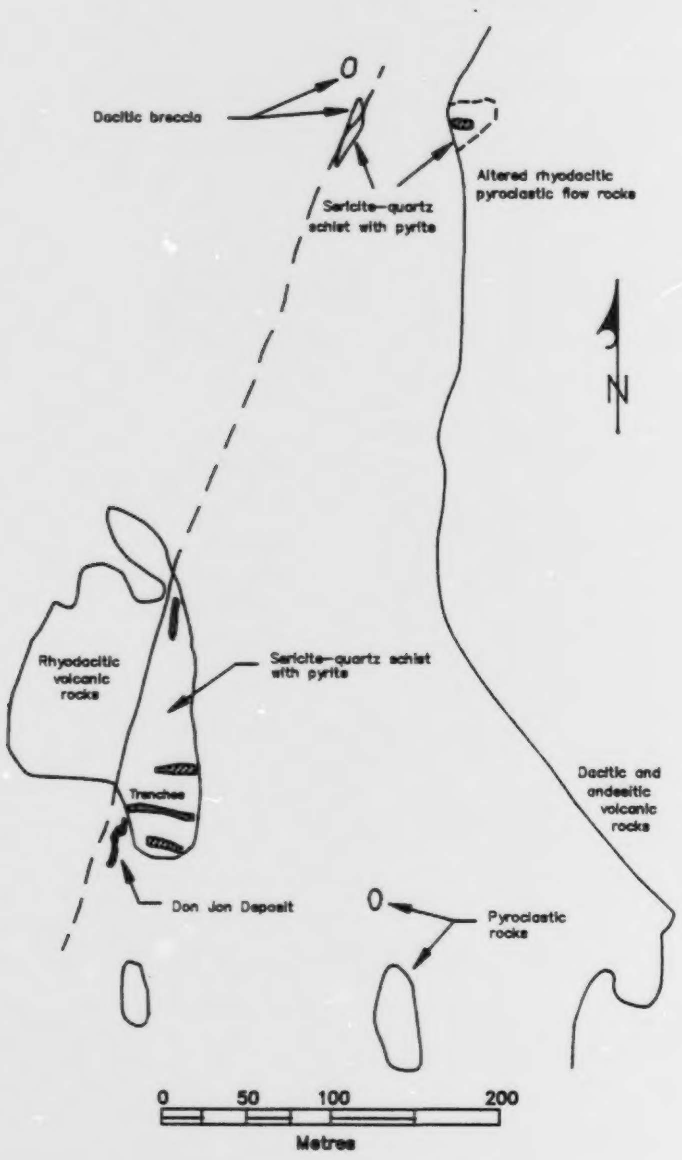

Dacitic breccia
Sericite-quartz schist with pyrite
Altered rhyodacitic pyroclastic flow rocks
N
Rhyodacitic volcanic rocks
Sericite-quartz schist with pyrite
Trenches
Dacitic and andesitic volcanic rocks
Don Jon Deposit
Pyroclastic rocks
0
50
100
200
Metres

Figure 4-1: General geology of the Don Jon Deposit.

by 1951. The mine was developed by driving a drift 493 m from the "600 foot level" of the North Star Mine. Production began in 1954 and ceased in 1957 when the deposit was mined out.

GEOLOGICAL SETTING:

The Don Jon mine, some 490 m east of the North Star mine, is also located within the major body of felsic volcanic rocks that underlies much of the immediate area (see Fig. 3-1 in file 63K/13SE #3). The area has been mapped by Bateman and Harrison (1945) and Dix (1948). The general geology of the immediate area is shown in Figure 4-1 (see also Fig. 3-2 in file 63K/13SE #3)

Preliminary investigations of the rocks on the shore of the mainland immediately east of the island indicated that they are probably altered equivalents of the quartz-feldspar- bearing rhyodacitic pyroclastic flow rocks (ignimbrites) that occur to the north (see Fig. 3-2 file 63K/13SE #3). The altered rocks contain wisps and stringers of black chlorite, are locally sericitic and occasionally contain veins of quartz-sericite-pyrite; i.e., these rocks probably represent a portion of an extensive zone of hydrothermal alteration.

The rocks on the west side of the island appear to be unaltered rhyodactic flow rocks.

MINERALIZATION:

The only description of the mineralization is that of the Geological Staff of H.B.M.S. (1957) and this account is extracted extensively from their article.

The two solid sulphide lenses (Fig. 4-2) strike approximately northeast, dip 75° to the northwest and plunge steeply to the southwest. The bulk of the ore was located between the 76 and 168 m (250 foot and 550 foot) levels of the mine. The sulphide lenses occurred in a "chloritic dacite" (Fig. 4-2). Surface exposures on the east side of the island consist of pyritized quartz-sericitic and quartz-chlorite-sericite schists of unknown affinity.

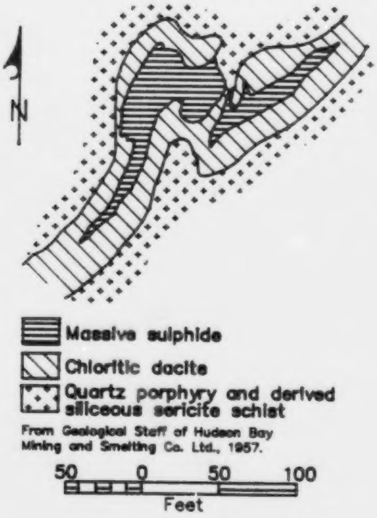

N
▤ Massive sulphide
▧ Chloritic dacite
Quartz porphyry and derived siliceous sericite schist
From Geological Staff of Hudson Bay Mining and Smelting Co. Ltd., 1957.
50
0
50
100
Feet

Figure 4-2: Plan of the 500 foot level, Don Jon Mine.

Pyrite and chalcopyrite are the main sulphide minerals in the solid sulphide lenses. Pyrite occurs throughout the sericitic schists. Masses of coarse grained pyrite (greater than 2 cm crystals) present in the surface trench rubble are probably sulphide mobilizate from late fractures. Although zinc was reported by Flintoba Mines Ltd. there is no mention of sphalerite in the H.B.M.&S. account of the deposit.

GEOCHEMISTRY:

Flintoba Mines Ltd. (1929) reported the following metal values from channel assays of trenches on the island. Trenches 1 and 6 are reported to have been 100 m apart.

		Cu%	Zn%	Au g/tonne	Ag g/tonne
Trench 1	8.4 m	4.28	0.96	1	----
Trench 2	1.82 m	4.30	1.39	1	----
Trench 3	3.5 m	8.54	2.04	1.4	----
Trench 3	4.5 m	7.90	2.29	0.02	3.6

Production from the deposit was 87 283 tonnes with a grade of 3.06% Cu, 0.96 g Au/tonne and 15.2 g Ag/tonne.

CLASSIFICATION:

A typical volcanogenic massive sulphide deposit type with a solid sulphide lens and a zone of sulphide-rich altered rock. The stratigraphic top and position of this deposit relative to the North Star Mine have not been established.

REFERENCES:

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A; one inch to one mile; Geological Survey of Canada, Ottawa.
Dix, W.F.
1948: Geology of the Baker, Cabin and Geo claims. 1:2400 geological map; Manitoba Energy and Mines Assessment Report 98684.
Geological Staff of the Hudson Bay Mining and Smelting Co. Ltd.
1957: North Star and Don Jon Mines, Cuprus Mine, Schist Lake Mine; in Structural Geology of Canadian Ore Deposits, Volume II, Canadian Institute of Mining and Metallurgy, p. 247-262.
Mineral Inventory Card 63K/13 Cu4
Manitoba Energy and Mines, Minerals Division.

LOCATION: 5 NAME: PINEBAY MINE

UTM: 6071442N 331847E AREA: Beneath Sourdough Bay (Athapapuskow Lake) AIRPHOTO: A19638-104

ACCESS:

Via North Star Road and the Pinebay Mine Road.

HISTORY OF EXPLORATION:

The land area around the Pinebay Mine was staked and explored by a number of individual prospectors and companies from the early 1920s to 1966. In 1966 A. Jackson staked the Bay 19 Fr. and A.L. Parres optioned the Bay 19 Fr. and leased claims owned by Kobby Lake Mines Ltd. for Guggenheim Exploration Co. and Cerro Mining Co. of Canada. Diamond drilling of a new conductor, found by an electromagnetic survey, discovered a sulphide zone beneath the lake that was estimated to contain 700 000 tonnes of 3% Cu to a depth of 152 m on the basis of 21 drill holes (Northern Miner, August 17, 1967).

A three compartment shaft was sunk in 1969 to a depth of 211 m (694 feet) and levels driven at the 61 and 183 m (200 and 600 foot) levels for a total of 1036 m of exploration drift. Approximately 4800 m of drilling was completed from surface and an additional 6000 m of underground drilling was done to delimit the ore zones. Exploration of the deposit below the 183 m level included drilling from exloration drifts on the 183 m level and several deep surface drill holes by Pinebay Mines and H.B.E.D. to approximately the 600 m level (see Mineral Inventory Card 63K/13 Cu2).

GEOLOGICAL SETTING:

The deposit is located in the central portion of Pine Bay, Lake Athapapuskow. It occurs on the western margins of the Baker Patton felsic complex (see Fig. 3-1, 63K/13SE #3); it is uncertain whether it is part of this felsic pile or in a separate fault block. The general geology of the area has been documented by Bateman and Harrison (1945) and Bailes and Lamb, 1977 (Fig. 5-1). The rocks encountered in drill holes in the vicinity of the Pine Bay deposit include andesite, rhyodacite and variably altered equivalents of these two rocks types. A fairly continuous straw-coloured quartz-sericite-carbonate schist zone may represent either an altered tuff unit or a zone of shear (A. Bailes, pers. comm., 1985). A shear zone interpretation is not inconsistent with the observations of pillow-derived tops to the west, on the west side of Pine Bay, and metal zonation indicating that the deposit tops to the east; younger definitive fault zone was identified during underground development.

MINERALIZATION:

The most detailed account of the mineralization is that of Bourlidge (1970) and this synopsis is drawn mainly from his account.

Four ore zones were delineated and are from southeast to northwest: A, B, C, and D (Figs. 5-2, 5-3). They consist almost entirely of solid sulphides surrounded by chloritic schist or altered chloritic rocks. Pyrite, pyrrhotite and chalcopyrite are the most abundant sulphide minerals. Bornite and sphalerite are minor constituents. Quartz, chlorite, talc and iron carbonate are common gangue minerals.

The largest zone is the southeastern A zone. It extends from the bottom of the lake to at least the 385 m level, the other zones appear to pinch out at the 183 m level. The A zone appears to be folded by a late open fold since the upper part of the zone dips steeply northwest, becomes vertical near the 120 m level and dips steeply southeast below the 183 m level (Fig. 5-3).

The A zone is mineralogically zoned. Chalcopyrite is most abundant on the northwest margin. The central portion contains pyrrhotite and chalcopyrite and the southeast margin consists of granular pyrite with only minor chalcopyrite. This suggests that the deposit's top may be towards the southeast unless the deposit is isoclinally folded about a northeast-trending axis. Metal zonation has not been reported for the other three zones.

If the deposit tops eastward, then the more than 152 m of intensely altered felsic volcanic rock encountered in deep drill hole 131-67 (Fig. 5-1) could be stratigraphically overlying the A zone and therefore should be related to a younger hydrothermal event to the southeast of the A zone. Further investigations of this deposit are contemplated with the ongoing studies of the Baker Patton area (Tannehill and Gale, 1986)

GEOCHEMISTRY:

The deposit has been reported to contain 1 340 000 tonnes with an average grade of 1.5% Cu (1969 annual Report of Cerro Mining Company). A large block of higher grade solid sulphide occurs in the crown pillar under more than 30 m of water and sediments. H.B.M.S. indicated in 1982 the presence of a mineable deposit of 400 000 tonnes of 3.2% Cu (Mineral Inventory Card 63K/13 Cu2). Bourlidge (1970) reports that although some assays of up to 3% Zn were obtained most of the samples do not contain any zinc. Most assays for gold returned only trace amounts. Silver contents of up to 6 g/tonne were recorded.

No systematic geochemical studies of this deposit have been undertaken to date. A brief investigation of a portion of the core from drill hole 131-67 was conducted in 1977 by G.H. Gale.

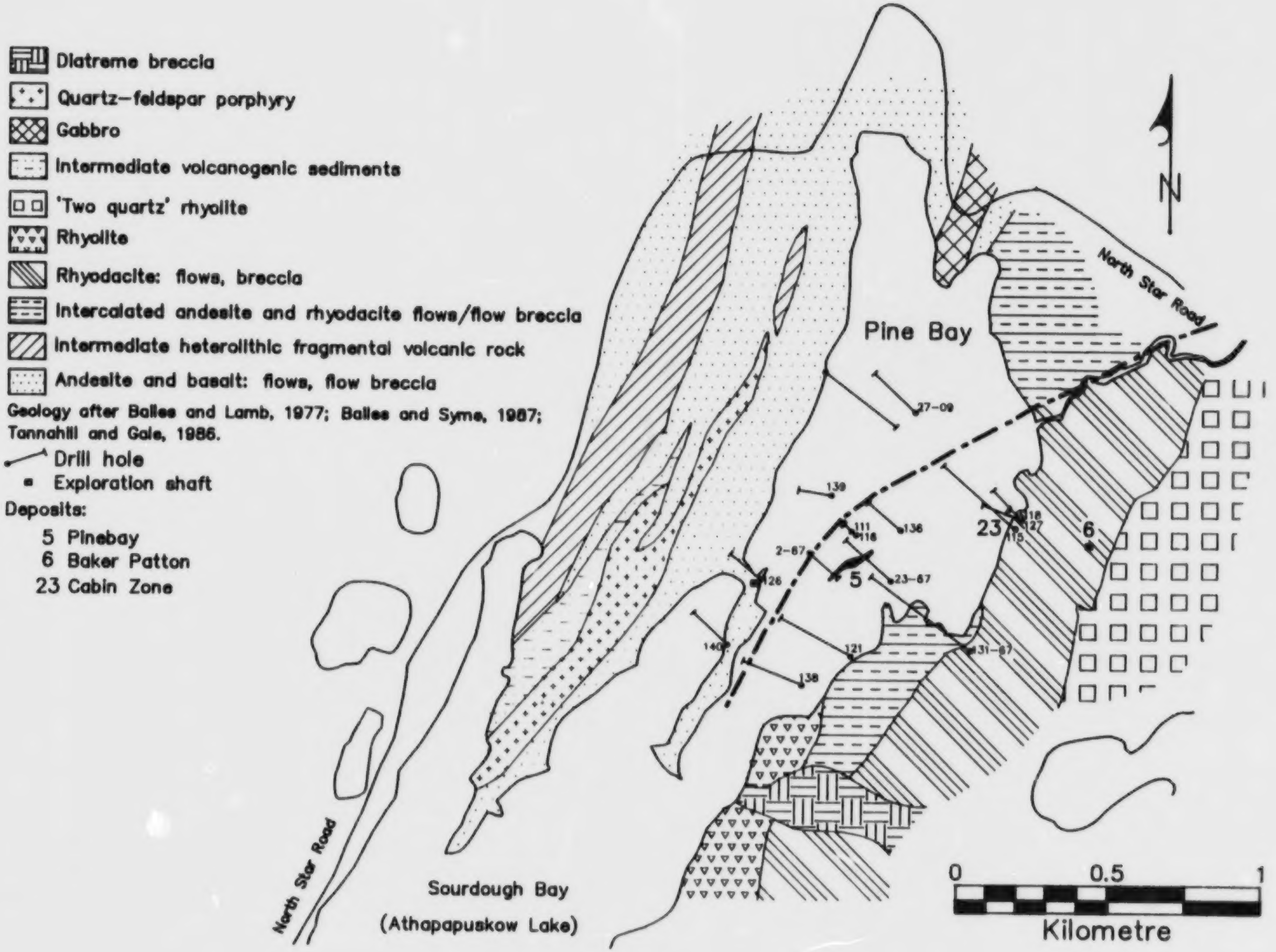

Diatreme breccia
Quartz–feldspar porphyry
Gabbro
Intermediate volcanogenic sediments
'Two quartz' rhyolite
Rhyolite
Rhyodacite: flows, breccia
Intercalated andesite and rhyodacite flows/flow breccia
Intermediate heterolithic fragmental volcanic rock
Andesite and basalt: flows, flow breccia
Geology after Bailes and Lamb, 1977; Bailes and Syme, 1987; Tannahill and Gale, 1986.
Drill hole
Exploration shaft
Deposits:
5 Pinebay
6 Baker Patton
23 Cabin Zone
N
North Star Road
Pine Bay
27-09
139
111
118
136
2-67
126
5
23-67
23
18
127
115
6
140
121
31-67
138
Sourdough Bay
(Athapapuskow Lake)
North Star Road
0
0.5
1
Kilometre

Figure 5-1: Geological setting of the Pinebay Deposit (#5 - 63K/13SE).

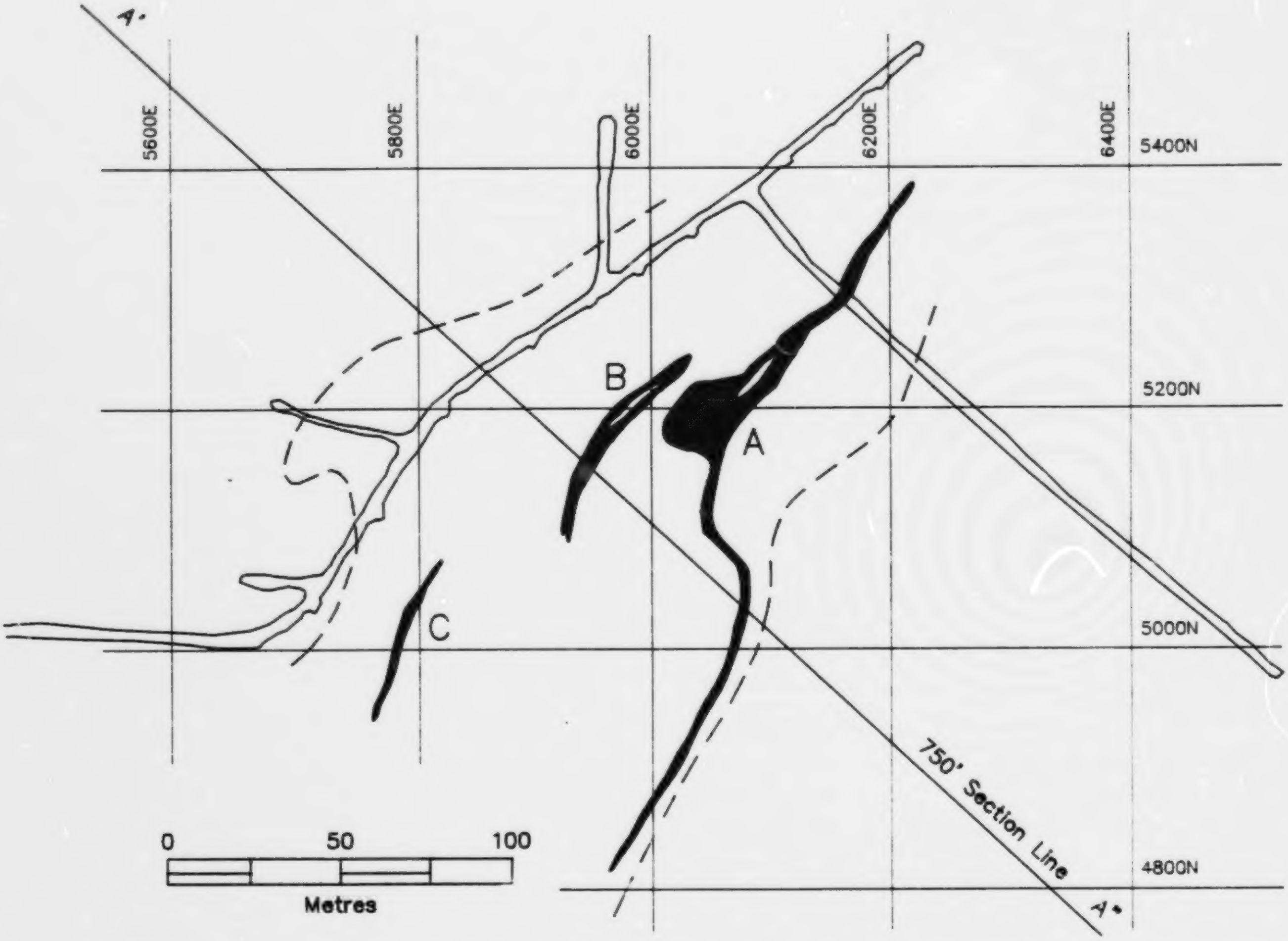

A
5600E
5800E
6000E
6200E
6400E
5400N
5200N
5000N
4800N
A
B
C
750' Section Line
A
0
50
100
Metres

Figure 5-2: Simplified 600 foot level plan of Pinebay Mine. A, B and C are solid sulphide lenses; dashed line indicates trend of geological units. (After Cerro Mining Company of Canada, 1970.)

CLASSIFICATION:

A volcanogenic massive sulphide deposit with solid sulphide lenses and an associated alteration zone.

REFERENCES:

Bailes, A.H., and Lamb, C.
1977: Geology of the Pine Bay Area; unpublished geological map, Manitoba Energy and Mines, Geological Services Branch.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

Bourlidge, C.R.
1970: Pinebay Mines Geology, unpublished report, Cerro Mining Co. of Canada, 16 p.

Cerro Mining Co. of Canda
1970: Mines Level Plans (Courtesy Pinebay Mines Ltd.).

Mineral Inventory Card 63K/13 Cu2
Manitoba Energy and Mines, Minerals Division.

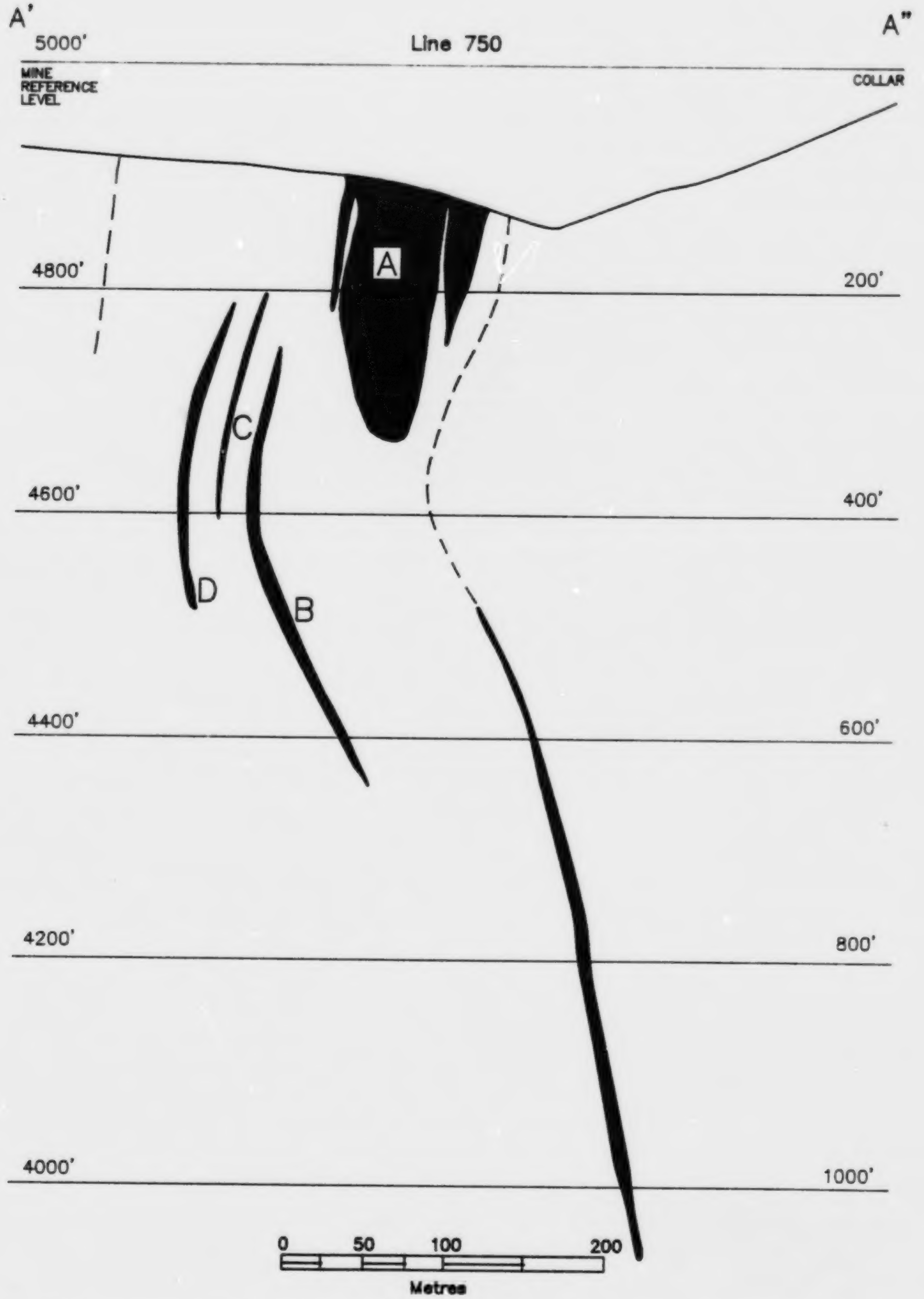

A'
A"
Line 750
5000'
MINE REFERENCE LEVEL
COLLAR
4800'
200'
4600'
400'
4400'
600'
4200'
800'
4000'
1000'
A
B
C
D
0
50
100
200
Metres

Figure 5-3: Pinebay Mine cross-section showing solid sulphide zones A, B, C and D. (After Cerro Mining Company of Canada.)

LOCATION: 6 NAME: BAKER PATTON

UTM: 607137N 334021E AREA: Approximately 400 m east of Sourdough Bay (Athapapuskow Lake) AIRPHOTO: A26328-14

ACCESS:

Via North Star Road to Flintoba Creek and then southwest on an abandoned road for approximately 800 m.

EXPLORATION HISTORY:

The Neo claim was staked by H.L.Baker and W. Patton in 1919. Some trenching was done in 1922 by the London Exploration Company. In 1927 the International Nickel Company of Canada Ltd. drilled 5 holes and obtained assays of 1.035% Cu over 27.4 m that included 3.2% Cu over 4.14 m. Callinan Flin Flon Mines Ltd. optioned the property in 1938 and sank a three compartment shaft to 126 m (415 feet) with drift stations at 45, 84 and 122 m. Approximately 192 m of underground drifting and crosscutting were completed. This work indicated 3.5 to 4% Cu over a 12 m width on the 84 m level and 3.6 m of 'ore' on the 122 m level that was reported as 3% Cu (Wright, 1931) .

The property was optioned to Mandy Mines Ltd. in 1929 and 1463 m of core were drilled in 21 holes. One 4.26 m (14 feet) section was reported as having 22-27% Zn and 1% Cu (The Northern Miner, April 3, 1930; see Mineral Inventory Card 63K/13 Cu1). The buildings and headframe were destroyed in a 1930 forest fire.

The property was optioned by H.B.E.D. in 1948, assigned to Don Jon Mines in 1951, and to Knobby Lake Mines Ltd. in 1958. Ansil Lake Mines optioned the property in 1964. The property was assigned to Guggenheim Exploration Co. Inc. in 1967, to Cerro Mining Co. of Canada Ltd. in 1973 and Pinebay Mines Ltd. in 1976. The property has since been optioned by H.B.E.D. and is held in 1987 by Granges Ltd.

GEOLOGICAL SETTING:

The Baker Patton deposit occurs within an extensive felsic volcanic pile (see Fig. 3-1, 63K/13SE #3). The area has been mapped at 1:2400 scale by Dix (1948) and Cerro Mining Co. geologists (unpublished) and at 1:500 scale by Hayden-Luck and Gale (1985) and Tannahill and Gale (1986). The felsic rocks range in composition from dacite to rhyolite (Fig. 6-1). The rock units are, from west to east: rhyodacite breccia; chloritic rhyodacite flows; sedimentary rocks; rhyolite breccia; 'two quartz' rhyolite breccia; and a dioritic intrusion. In the vicinity of the Baker Patton deposit the volcanic rocks are intensely altered; less altered varieties are present both north and south of the shaft area.

The rhyodacite breccia is a fragmental rock with subrounded to angular dacitic to rhyolitic fragments (3-4 cm in length) and generally 5% matrix material. It is buff to cream coloured on weathered surfaces. In contrast the chloritic rhyodacitic flows are brown weathering and consist of massive and flow breccia portions. In thin sections this rock contained abundant chlorite; however, chemical analyses indicate silica compositions in the range for rhyolite.

The sedimentary rocks form a narrow (1-10 m thick) banded unit of laminated tuffaceous to lapilli sized clastic rock fragments, with rare 4-20 cm blocks, that can be followed in discontinuous outcrop for <200 m. Locally, it directly underlies the 'two quartz' rhyolite.

The rhyolitic breccia is a unit of aphyric rhyolitic fragmental rocks that range in size from ash to blocks (30 cm ±) but consist mainly of 4-10 cm fragments. Locally these rocks appear to be flow breccia; however, in general, they resemble reworked pyroclastic rocks.

The 'two quartz' rhyolite is an extensive unit of reworked pyroclastic rocks derived mainly from quartz-phyric rhyolitic flow rocks with 5% quartz phenocrysts that are 0.5-1 mm and 3-5 mm in size. Locally lenses of feldspar-phyric fragmental rocks are present with this map unit. The unit is conspicuous by the 10-20% bimodal quartz crystals. Only one outcrop of a white rhyolite flow has been found within this unit.

Stratigraphic tops within this area are uncertain. Flow units in the rhyodacitic flows suggest tops are towards the east. This is further substantiated by incipient scouring within the sedimentary unit; however, size grading of clasts within a tuffaceous unit suggests that tops could conceivably be westwards. At this time (1987) an eastward-topping sequence appears to be most probable.

It is anticipated that detailed studies of this area will continue over the next few years.

MINERALIZATION:

One of the conspicuous features of the Baker Patton area is the extensive sulphide mineralization (Fig. 6-2). Although the old trenches are oxidized and filled in and old drill records are not available, it is possible to reconstruct some information on the nature of the mineralization from the reports of Wallace (1923), Morgan (1940), Dix (1949) and from personal examinations of trenches, exposures and the mine dumps. The zones of most abundant sulphide mineralization are labelled A-D on Figure 6-1.

Zone A, the main occurrence, was trenched extensively and tested by drilling and a 126 m shaft. This occurrence was described by Wallace (1923) as "massive pyrite and bands of chalcopyrite in intimate mixture with the

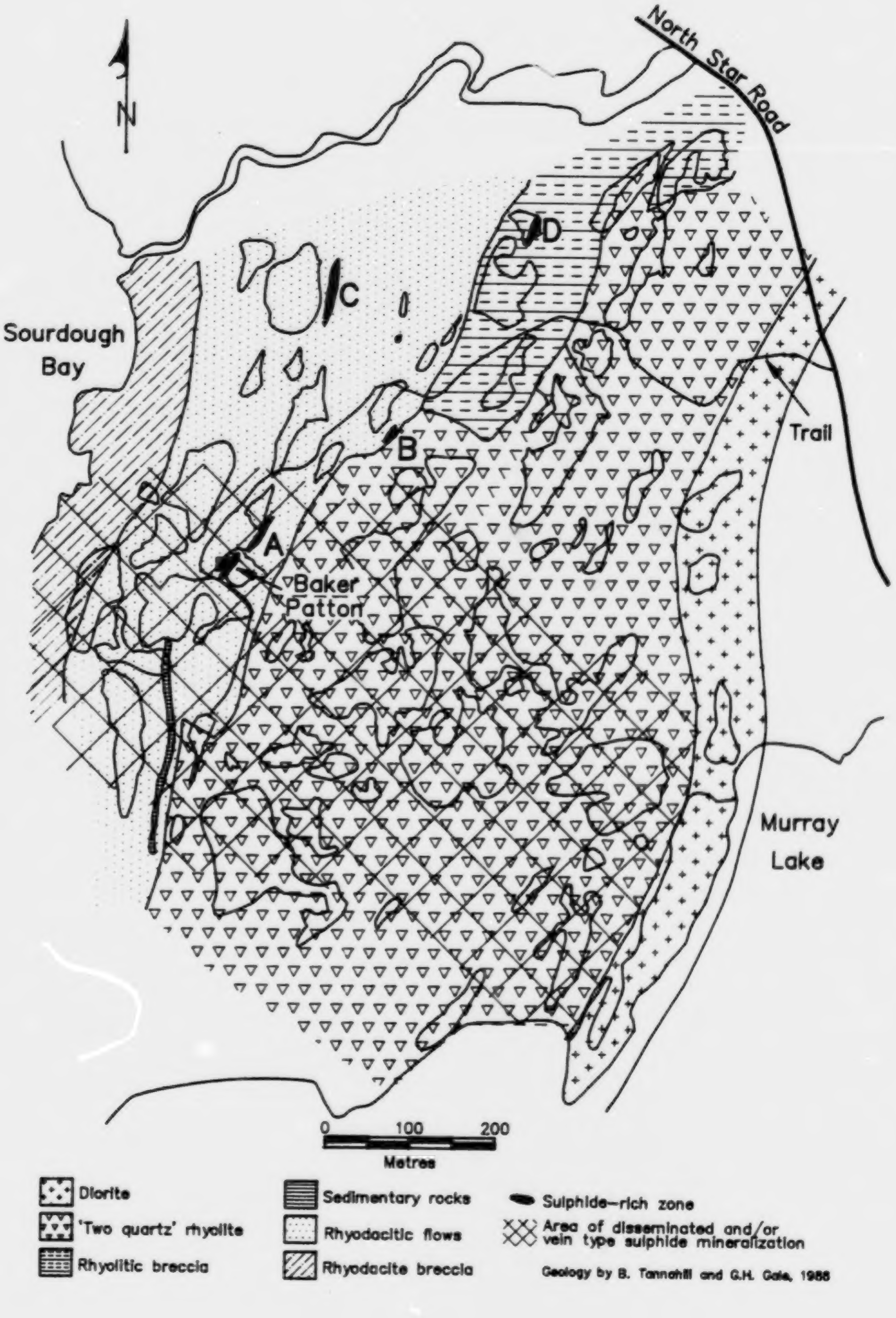

N
North Star Road
Sourdough Bay
Trail
Baker Patton
Murray Lake
A
B
C
D
0
100
200
Metres
Diorite
'Two quartz' rhyolite
Rhyolitic breccia
Sedimentary rocks
Rhyodacitic flows
Rhyodacite breccia
Sulphide-rich zone
Area of disseminated and/or vein type sulphide mineralization
Geology by B. Tannahill and G.H. Gale, 1988

Figure 6-1: Felsic volcanic rocks of the Baker Patton area, and location of sulphide-rich zones.

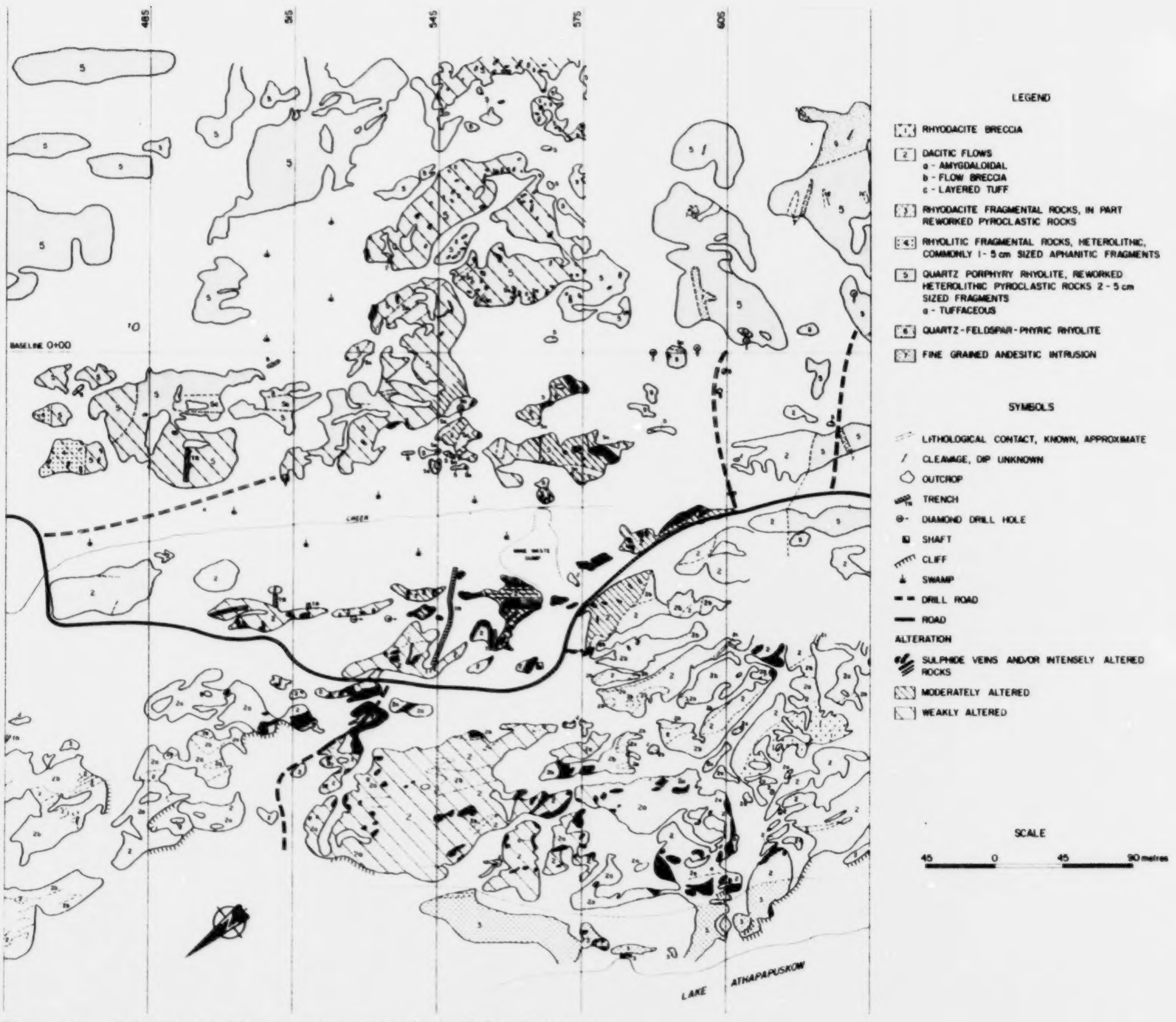

485
515
545
575
605
BASELINE 0+00
LAKE ATHAPAPUSKOW
LEGEND
RHYODACITE BRECCIA
DACITIC FLOWS
a - AMYGDALOIDAL
b - FLOW BRECCIA
c - LAYERED TUFF
RHYODACITE FRAGMENTAL ROCKS, IN PART REWORKED PYROCLASTIC ROCKS
RHYOLITIC FRAGMENTAL ROCKS, HETEROLITHIC, COMMONLY 1 - 5 cm SIZED APHANITIC FRAGMENTS
QUARTZ PORPHYRY RHYOLITE, REWORKED HETEROLITHIC PYROCLASTIC ROCKS 2 - 5 cm SIZED FRAGMENTS
a - TUFFACEOUS
QUARTZ - FELDSPAR - PHYRIC RHYOLITE
FINE GRAINED ANDESITIC INTRUSION
SYMBOLS
LITHOLOGICAL CONTACT, KNOWN, APPROXIMATE
CLEAVAGE, DIP UNKNOWN
OUTCROP
TRENCH
DIAMOND DRILL HOLE
SHAFT
CLIFF
SWAMP
DRILL ROAD
ROAD
ALTERATION
SULPHIDE VEINS AND/OR INTENSELY ALTERED ROCKS
MODERATELY ALTERED
WEAKLY ALTERED
SCALE
45
0
45
90 metres

Figure 6-2: Sulphide distribution and alteration in the Baker Patton area.

pyrite". Blocks of solid sulphide are present on the waste dump and a 40 cm thick section of solid pyrite was observed in drill core. A zone of pyrite-quartz mineralization with 10-50% pyrite is exposed at the surface and has an east-west width of approximately 60 m at the shaft and a north-south length of over 180 m; the zone narrows rapidly northwards. Wright (1938) reports that "The underground workings across the zone of sulphide-bearing rock cut a few lenses and dyke-like masses of nearly massive pyrite carrying a little chalcopyrite and quartz" (p. 52e).

Although the available information suggests that a solid sulphide layer existed in this deposit, a lack of definitive data precludes determination of whether the solid sulphide sections were part of narrow sulphide lenses or thick sulphide veins. A fault has displaced the mineralized zone in an east-west direction.

Zone B. This zone of mineralization occurs near the contact between dacitic rocks on the west and altered 'two quartz' rhyolite fragmental rocks on the east. The zone comes to surface beneath a creek and swamp and is known only from drill cores. The mineralization is 0.3 to 3 m thick and differs from other mineralized zones in the Baker Patton area in that it contains abundant sphalerite and silver (e.g. 16% Zn and 70 g/tonne Ag over 4.2 m; and 22-27% Zn and 1% Cu over 4.2 m: Mineral Inventory Card 63K/13 Cu1). This mineralized zone appears to have a short strike length since holes on either side do not appear to have encountered mineralization. This zone may represent a 'vein' of mobilized sulphide mineralization at the contact between two different rock types.

Zone C. This is a zone of altered rhyodacitic rocks with a length of 150 m and a width of 30 m containing up to 5% pyrite and numerous stringers of pyrite and chalcopyrite. This zone is exposed in trenches and has been drilled (Fig. 6-3).

Zone D. Veinlets of chalcopyrite ± pyrite mineralization are exposed in several large trenches. These veins occupy late fractures and are typical of chalcopyrite-quartz mobilizate. Despite high-grade sections, drilling has not delineated an ore deposit.

Pyrite mineralization is also abundant outside the four zones identified on Figure 6-1. An extensive zone of disseminated (1-10%) pyrite cross-cuts the strike of the 'two quartz rhyolite' fragmental rocks and is accompanied locally by approximately one metre thick occasional sulphide veins with 10-50% pyrite in a quartz and sericite matrix. In contrast, the sulphides in the rhyodacitic flow rocks west of the Baker Patton shaft area occur mainly in discrete veins that predate the metamorphism and appear to represent a fracture-controlled alteration vein-network (Fig. 6-2).

GEOCHEMISTRY:

Only sparse information is available on the chemistry of the Baker Patton ores. Wallace (1923) reports assays of 6.95% Cu and 4.09% Cu over 1.7 m sections from two sections of the same trench near the Baker Patton shaft (Zone A) and 1.12% Cu over 3 m from Zone D. Wright (1938) indicates that a narrow body of 3% Cu was found on the 122 m level of the Baker Patton Mine. Holes drilled by the International Nickel Co. cut the deposit at 30-83 m below surface. Hole 4, 45 m north of the shaft, contained 2.3 m of 1.9% Cu. Hole 6, 15 m north of the shaft, contained 4.6 m of 1.16% Cu. Hole 7, 7.5 m south of the shaft, contained 27.4 m of 1.035% Cu that included 4.1 m of 3.29 Cu. Hole 8, 30 m south of the shaft, contained 1.1 m of 2.0% Cu. In addition, Mandy Mines Ltd. is reported to have found 1 to 1.1 m of 20% Zn in a hole 150 m south of the shaft (Transcan Investors Ltd.). Dix (1948) reports 6.6% Cu over a 45 cm length from the Baker Patton shaft area, 9.5% Cu over 60 cm from zone C and 6.2% Cu over 1.5 m from Zone D.

Other geochemical data available include whole and trace element analyses of different rock types by Mwanang'Onze (1978) and a systematic rock geochemistry sampling program conducted by G.H. Gale (unpublished data) that will be included in a forthcoming Open File on the Baker Patton area.

CLASSIFICATION:

Volcanogenic massive sulphide type deposit (Zone A). Vein type mobilizate in zones C and D.

REFERENCES:

Dix, W.F.
1948: Geology of the Baker, Cabin and Geo claims; 1:2400 geological map; Manitoba Energy and Mines, Minerals Division Assessment Report 98684.

Mineral Inventory Card 63K/13 Cu1
Manitoba Energy and Mines, Minerals Division.

Morgan, J.H.
1940: Baker Patton; Unpublished notes, 2 p.; Manitoba Energy and Mines.

Mwanang'Onze, E.H.B.
1978: Stratigraphy and petrochemistry of the host rocks of copper-zinc deposits in the Flin Flon-Snow Lake greenstone belt; unpublished Ph.D. thesis, University of Manitoba.

Pinebay Mines Ltd.
Drill hole compilation, unpublished.

Tannahill, B. and Gale, G.H.
1986: Geology of the Baker Patton area; in Report of Field Activities, Manitoba Geological Services Branch, p. 65-67.

Transcan Investors Ltd. Corp. File
Unpublished file, Manitoba Energy and Mines, Minerals Division.

Wallace, R.C.
1923: Report on the Baker-Patton Group; unpublished report, 6 p; Manitoba Energy and Mines.

Wright, J.F.
1938: Geology and Mineral Deposits of a part of Northwest Manitoba; Geological Survey of Canada, Summary Report 1930, Part C. p. 51-52.

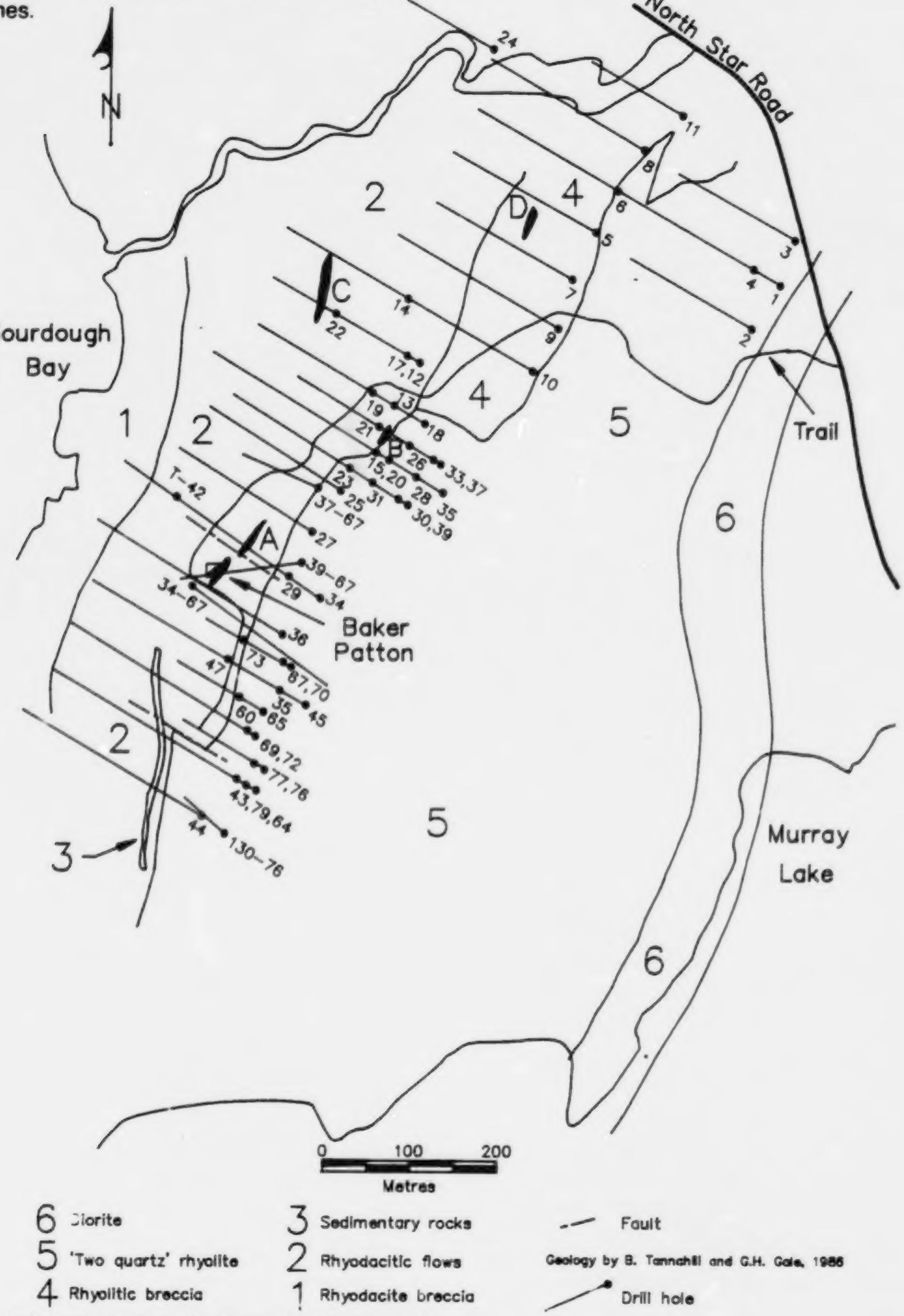

N
North Star Road
Sourdough Bay
Trail
Baker Patton
Murray Lake
A
B
C
D
1
2
3
4
5
6
24
11
8
6
5
7
3
4
1
2
9
10
14
22
17,12
13
19
18
21
26
33,37
15,20
28
35
23
25
31
30,39
37-67
27
T-42
39-67
29
34
34-67
36
73
47
67,70
35
45
60
65
69,72
77,76
43,79,64
44
130-76
0
100
200
Metres
6 Diorite
5 'Two quartz' rhyolite
4 Rhyolitic breccia
3 Sedimentary rocks
2 Rhyodacitic flows
1 Rhyodacite breccia
Fault
Drill hole
Geology by B. Tannahill and G.H. Gale, 1986

Figure 6-3: Drill hole locations at the Baker Patton Deposit.

LOCATION: 7

NAME: AMULET

UTM: 6073758N 332763E

AREA: West shore of Amulet Lake, 1 km north of Sourdough Bay, Lake Athapapuskow.

AIRPHOTO: A19638-102

ACCESS:

Via North Star Road and trail to Amulet Lake.

EXPLORATION SUMMARY:

The occurrence was staked in 1920 as the Bell Claim by G. Rosen (Mineral Inventory Card 63K/13 Cu9). The claims have been cancelled and restaked a number of times and are currently held by Pinebay Mines Ltd. Four drill holes (42.6 m) were drilled by H.B.E.D. in 1945-46. A magnetic survey was conducted and 17 holes were drilled during 1946 and 1947 by H.B.E.D. A total of 61 holes had been drilled by the end of 1953. One hole 13-68 (283 m) was drilled by the Guggenheim Exploration Co. Geological and electromagnetic surveys were made over the area in 1972.

A 2 m deep shaft and a 5-6 m long adit have been dug on the western shore of Amulet Lake. Several small trenches were dug near the southwest end of the lake (Fig. 7-1).

GEOLOGICAL SETTING:

The area is underlain predominantly by andesite and dacite lavas and volcanic-sedimentary rocks that are locally well-layered (northeast corner of Amulet Lake). Mafic rocks are exposed along the northeastern shores of the lake. A quartz-eye carbonate-sericite schist approximately 1 m thick occurs on the eastern contact of fine grained silicic volcanic rocks that form a small ridge on the western shore of the lake. The quartz-carbonate schist can be followed in outcrop for more than 100 m to the southeast along the edge of a small cliff.

MINERALIZATION:

Malachite- and chalcopyrite-bearing chlorite schists are exposed approximately 50 cm below a westward-dipping quartz-carbonate-sericite schist. Rubble from the trenches contains stringers of chalcopyrite and pyrite.

The mineralized chloritic schists along the the western shores of the lake resemble hydrothermally altered rocks. Although minor pyrite was observed in the silicic volcanic rocks to the west of the lake, these rocks did not visually appear to have been altered. At the northeast end of the lake there are fine grained, schistose silicic rocks with less than 1 cm thick sulphide veinlets and areas that are probably related to a hydrothermal alteration zone. Other evidence of alteration on the surface include small (3 x 15 cm) talcose areas, areas (10-50 cm x 3-4 m) areas with intense chloritization (black chlorite = magnesium metasomatism) and mottled silicic rocks in exposures along the eastern shore of the lake. Carbonate veins and lenses are common in several exposures in the southeast corner of the lake.

Drill core from the hole drilled by Guggenheim Exploration contained extensive sections of chloritic schists with disseminations and stringers of sulphides (pyrite, pyrrhotite and chalcopyrite) that resemble alteration zones associated with massive sulphide-type deposits in low to medium grade metamorphic terranes. This zone of alteration is considered to crop out beneath Amulet Lake; consequently the alteration-like features on the east shore of the lake may be the eastern margins of an alteration zone.

GEOCHEMICAL DATA:

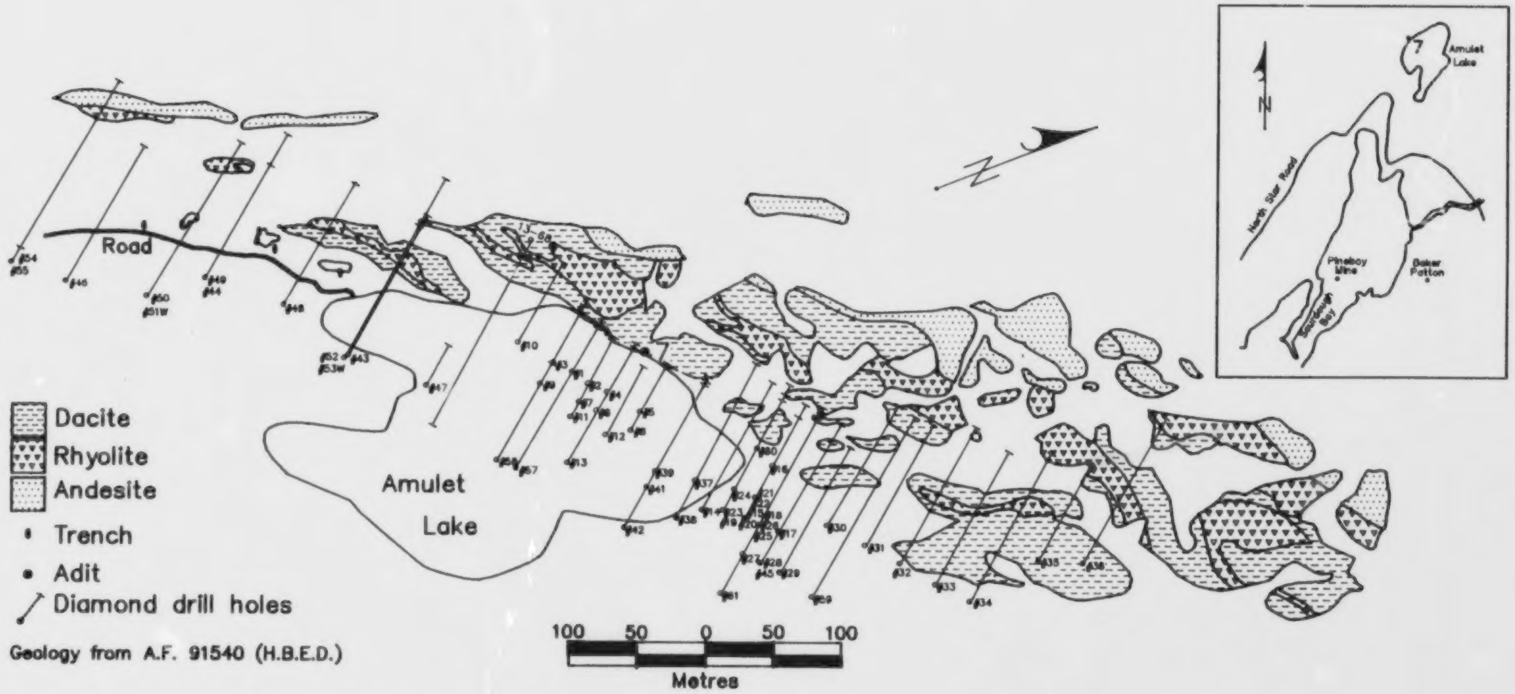
Three drill holes were drilled to depths of 45, 60 and 45 m in 1951 by T. Webb (Assessment File 91482). The log for drill hole 3 indicates dacite and rhyolite were intersected; hole 1 intersected dacite and mineralized black chlorite schists. The drill log for drill hole 48 (Assessment File 91540) indicates that this hole intersected mainly chlorite-sericite schists, dacite and rhyolite and minor pyrite and chalcopyrite mineralization. Information provided by Mr. A.L. Parres indicates that 10 holes intersected interesting grades of sulphide mineralization. Drill cores from Holes 43, 47, 1, 11, 12 and 6 contain copper mineralization. Hole 6 contained 50 cm of 8.0% Zn, 2.22 m of 3.3% Zn and 2.6 m of 0.9% Zn and 2.18% Cu. The zinc-rich portion of this deposit is east of the copper-bearing portion. In addition Hole 22 contained 36 cm of 8.4% Zn and 3.2% Cu; Hole 15 contained 80 m of 4.5% Zn and 2.37% Cu; and Hole 44 contained 45 cm of 0.1% Zn and 3.15% Cu. Hole 46 contained 45 cm of 1.09% Zn and 0.17% Cu. In general the higher zinc values were intersected at the north end of the lake. Holes beneath the lake and south of the lake contained considerably more copper than zinc.

Drill hole 13-68 encountered minor copper-bearing chloritic schist and altered dacites. Hole 13-68 may have ended in altered dacite, however, no other holes appear to have been drilled in the area to the east (Fig. 7-1).

Stratigraphic tops in the area. Limits of alteration and extent of mineralization are not certain. The zinc-rich zones structurally overlie the copper-rich zones and may indicate stratigraphic tops are to the east; however, it is not certain if these intersections represent solid sulphide layers or simply stringers of sulphide.

CLASSIFICATION:

The zone of mineralization appears to be part of an alteration zone associated with a massive sulphide


Dacite
Rhyolite
Andesite
Trench
Adit
Diamond drill holes
Road
Amulet Lake
N
100 50 0 50 100
Metres
Amulet Lake
7
North Star Road
Pineboy Mine
Baker Patton
Sourdough Bay

Geology from A.F. 91540 (H.B.E.D.)

Figure 7-1: Geological setting of occurrence#7 (63K/13SE).

deposit on the basis of abundant chlorite schist, black chlorite (magnesium-chlorite), disseminated and stringer pyrite and chalcopyrite, and copper and zinc mineralization. The presence of a lens of solid sulphide cannot be determined from the available information.

REFERENCES:

Mineral Inventory Card 63K/13 Cu9
Manitoba Energy and Mines, Minerals Division.

Assessment Files 91482, 91541, 90451
Manitoba Energy and Mines, Minerals Division

Parres, A.L.
Box 577, Flin Flon, Manitoba; Unpublished exploration files, Manitoba Energy and Mines, Minerals Division.

LOCATION: 8

NAME: WHITEFISH

UTM: 6072219N 328994E

AREA: Whitefish Lake

AIRPHOTO: A16328-201

ACCESS:

Via Highway 10A and North Star Road to Whitefish Lake, boat to north end of lake, winter road and old trail to central portion of intrusion.

EXPLORATION SUMMARY:

A number of shallow trenches were blasted along the strike of a fault zone prior to 1951 when four holes were drilled to depths of 15-60 m. In 1980 a number of trenches were put down by A.L. Parres following the discovery of molybdenite by Baldwin, (1980). A drill hole was put down on the property in 1981 by Granges Exploration (A. O'Donnell, pers. comm. 1984).

GEOLOGICAL SETTING:

The Whitefish Lake Porphyry is a single phase quartz monzodiorite body intruded into volcanic rocks of the Amisk Group. Its contacts are sharp and there are abundant country rock xenoliths near its margins. Small dykes (0.5 to 10 m) of this rock occur in the volcanic rocks up to 250 m from the main intrusion (Baldwin, 1980).

The quartz monzodiorite contains 5 mm phenocrysts of plagioclase and hornblende that are set in a fine grained mixture of interstitial plagioclase, hornblende, and minor quartz, potassium feldspar, sericite, chlorite, epidote and carbonate. Plagioclase occurs as well developed laths and equidimensional crystals. Prismatic hornblende is subordinate to plagioclase in abundance. Potassium feldspar occurs as interstitial grains and veinlets (Baldwin, 1980).

The Whitefish Lake Porphyry is variably altered. At the margins of the intrusion the plagioclase is slightly altered to sericite, however, the alteration increases towards the centre of the intrusion and the plagioclase consists of sericite, epidote and chlorite and locally the hornblende is replaced by chlorite, epidote and carbonate. In the most intensely altered portions of the intrusion the plagioclase is altered to potassium feldspar or masses of epidote and chlorite. The more intensely altered zones commonly contain veinlets and fractures filled with potassium feldspar, quartz, chlorite, pyrite, chalcopyrite and molybdenite (Baldwin, 1980).

MINERALIZATION:

Veins, stringers and disseminations of chalcopyrite and pyrite are most abundant along the eastern margin of a small depression. The veins and stringers are commonly a few mm to a few cm in thickness, subvertical and appear to be parallel to the fault zone that can be traced for approximately 700 m along strike southwards in a num-

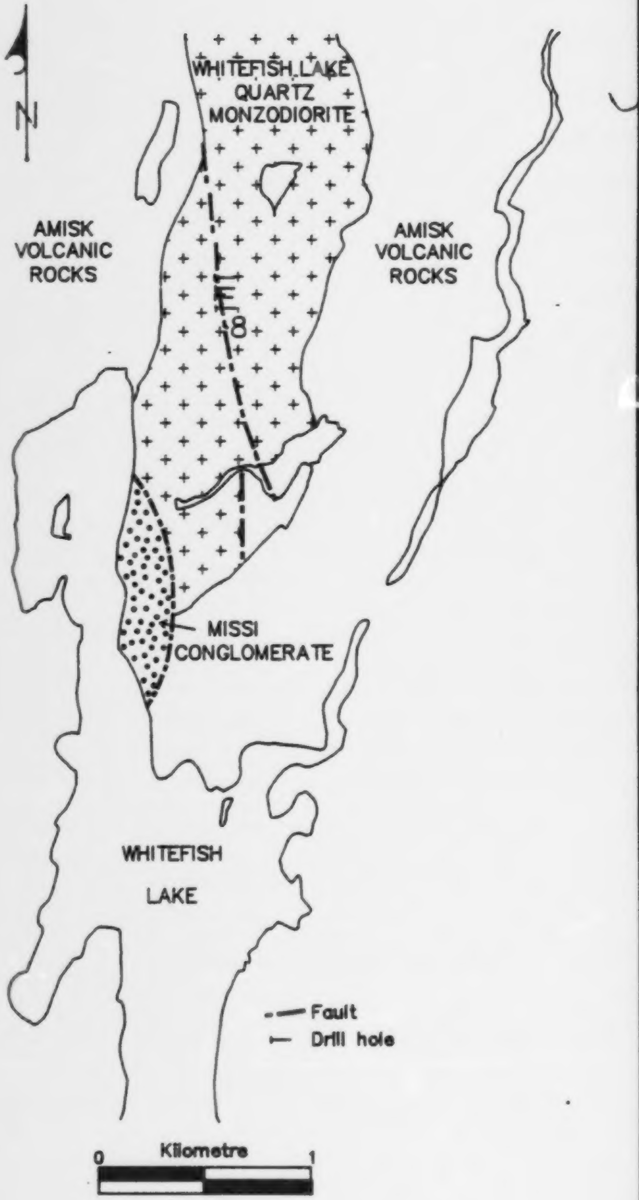


Figure 8-1: Geological setting of occurrence #8 (63K/13SE). Geology after Baldwin, 1980; Bailes and Syme, 1987.

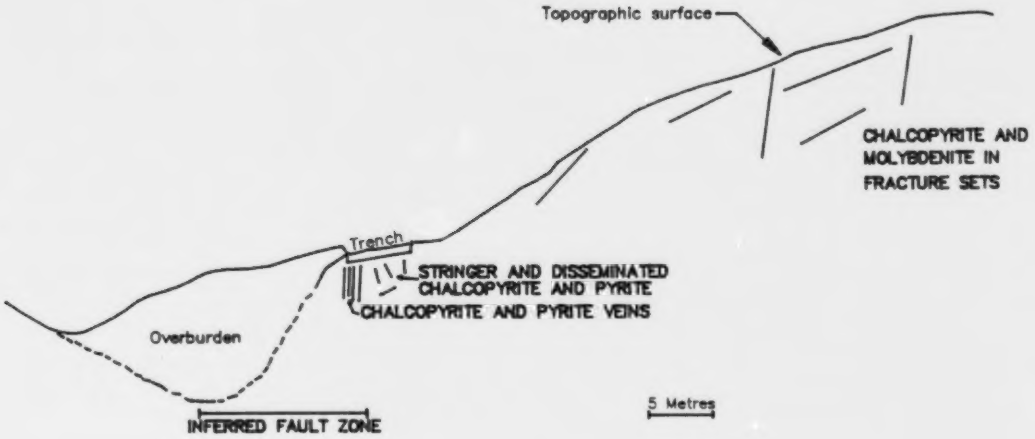

Topographic surface
CHALCOPYRITE AND MOLYBDENITE IN FRACTURE SETS
Trench
STRINGER AND DISSEMINATED CHALCOPYRITE AND PYRITE
CHALCOPYRITE AND PYRITE VEINS
Overburden
5 Metres
INFERRED FAULT ZONE

Figure 8-2: Schematic sketch of relationship between A.L. Parres trench and fault zone, Whitefish Lake.

ber of the pre-1951 trenches. Baldwin (1980) discovered that chalcopyrite and molybdenite veinlets occur in three vertically dipping sets and one subhorizontal set of fractures, spaced 4 to 30 cm within the most intensely altered portions of the intrusion. The molybdenite occurs preferentially within the 045° and subhorizontal sets of fractures. The fracture sets containing copper and molybdenum mineralization were healed by the mineralization and consequently it is extremely difficult to break the rock along these earlier fractures.

Pyrite and chalcopyrite occur within the fractures as fine grained disseminated patches up to 2 cm in diameter; molybdenite occurs as rosettes up to 4 mm across and as a thin film together with chalcopyrite.

The greatest concentration of mineralization discovered to date was in the westernmost part of the trench put down by A.L. Parres (Table 8-1). It is assumed that this higher grade mineralization represents the eastern margin of a fault zone that is postulated to follow the shallow depression (Fig. 8-2). The four drill holes drilled on the Dolly 2 claim (AF 90418) were probably drilled to test the mineralization observed in trenches along the fault zone since these holes intersected "minor chalcopyrite", "some massive chalcopyrite" and "some chalcopyrite" and "pyrite". Although a plot of these drill holes relative to the claim maps suggests that the holes were drilled to the east of the fault zone along a small creek, there is field evidence of drilling near the fault zone; there is no evidence of either drilling or surface workings in the location indicated on the claim maps. Consequently, these drill hole locations are now shown as having been drilled along the fault zone (Fig. 8-1).

TABLE 8-1

Gold, Copper and Molybdenum Analyses of Samples collected from Whitefish Lake.

Sample *	Au oz/ton	Cu %	Mo%
1. 42-0-WF1	0.01	0.04	NIL
2. 42-0-WF2	0.01	0.44	NIL
3. 42-0-WF3	Tr	0.20	NIL
4. 42-0-WF (0-2 m)	Tr	0.37	NIL
5. 42-0-WF (2-3 m)	Tr	0.27	NIL
6. 42-0-WF (3-4 m)	Tr	0.51	NIL
7. 42-0-WF (4-5 m)	Tr	0.36	NIL
8. 42-0-WF (T2)	Tr	0.04	NIL
9. 42-0-WF (Py)	Tr	0.74	NIL
10. 42-0-WF (Cp)	Tr	1.52	NIL

Assays by Manitoba Energy and Mines, 1981.

*Samples: 1 - 3: Grab samples from A.L. Parres trench. 4 - 7: Chip samples from A.L. Parres trench, No. 4 at east end of trench. 8: Small trench approximately 15 m east of A.L. Parres trench. 9: Pyritic sample (30% pyrite) from A.L. Parres trench. 10: Chalcopyrite-rich portion of A.L. Parres trench.

GEOCHEMICAL DATA:

Baldwin (1980) collected 46 samples from the pluton along widely spaced grid lines. Geochemical analyses of these samples identified three zones or areas with anomalous copper and molybdenum values (Fig. 8-3). The highest values obtained were 980 ppm Cu and 76 ppm Mo (Baldwin, 1980).

CLASSIFICATION:

The chalcopyrite, pyrite and molybdenite-bearing fracture sets in the altered intrusion are considered to be

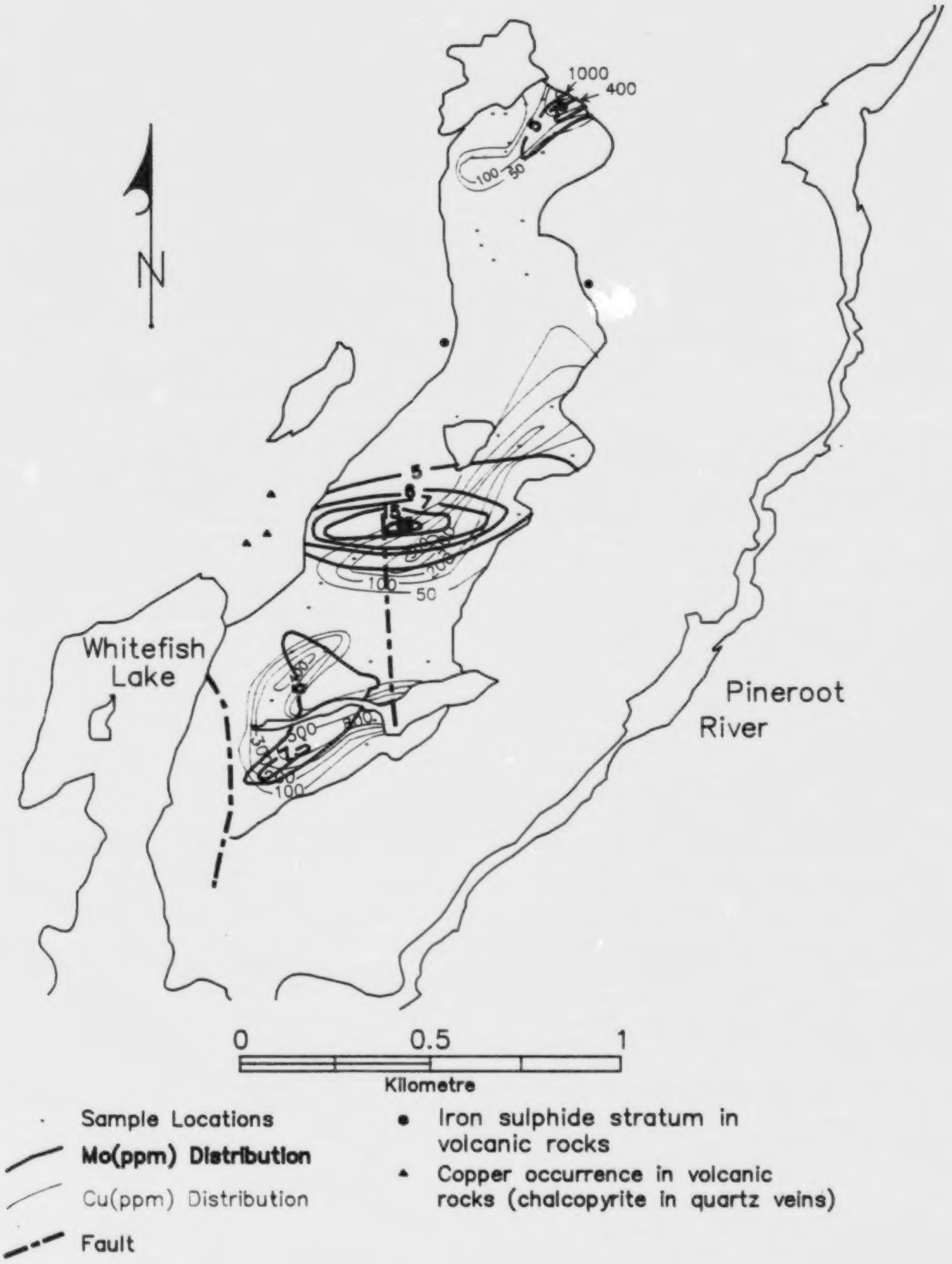

N
1000
400
100
50
5
6
7
100
50
Whitefish Lake
Pineroot River
0
0.5
1
Kilometre
Sample Locations
Mo(ppm) Distribution
Cu(ppm) Distribution
Fault
Iron sulphide stratum in volcanic rocks
Copper occurrence in volcanic rocks (chalcopyrite in quartz veins)

Figure 8-3: Distribution of Cu (ppm) and Mo (ppm) in the Whitefish Lake porphyry. (After Baldwin, 1980.)

a porphyry-type mineralizing event (Baldwin, 1980). The veins, veinlets and disseminations of chalcopyrite and pyrite adjacent to the fault zone are considered to represent a later event. Sulphides introduced during the earlier mineralization were mobilized into the fault zone either during or after the development of the fault. The highest potential zones in this intrusion are considered to be where faults have intersected earlier zones of alteration and mineralization.

REFERENCES:

Assessment File 90418
Manitoba Energy and Mines, Minerals Division.

Baldwin, D.A.
1980: Porphyritic intrusions and related mineralization in the Flin Flon volcanic belt; Manitoba Energy and Mines, Mineral Resources Division, Economic Geology Report ER79-4.

LOCATION: 9 NAME:

UTM: 6070472N 329195E AREA: east of Whitefish Lake AIRPHOTO: A20040-107

ACCESS:

Via Highway 10A to North Star Road and boat on Whitefish Lake.

EXPLORATION SUMMARY:

The area of the gold occurrence indicated by Bateman and Harrison (1945) was searched; however, no old workings were found. The small trench (Fig. 9-1) located closer to the lake in the small bay north of the Bateman and Harrison location is considered to be a post-1945 trench.

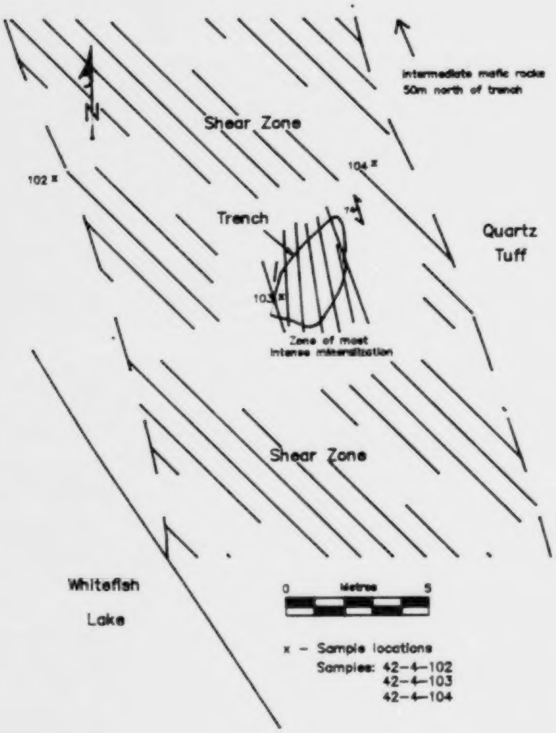

intermediate mafic rocks
50m north of trench
N
Shear Zone
102 x
104 x
Trench
74
Quartz
Tuff
103 x
Zone of most
intense mineralization
Shear Zone
Whitefish
Lake
0
Metres
5
x – Sample locations
Samples: 42–4–102
42–4–103
42–4–104

Figure 9-1: Pyrite occurrence, east shore of Whitefish Lake.

GEOLOGICAL SETTING:

The area is underlain by quartz-phyric rhyolite of probable tuffaceous origin and volcanic fragmental rocks with both felsic and mafic fragments in a dominantly mafic matrix. A small intrusion of monzodiorite immediately west of the occurrence may be part of the Whitefish Lake intrusion (Fig. 9-2).

MINERALIZATION:

In a brief search of the area indicated as a gold occurrence by Bateman and Harrison (1945) no trench was found but a thin layer of magnetite was observed (D.A. Baldwin, pers. comm.). The trench (3.5 m x 2.5 m x 4 m) found at location 9 (Fig. 9-1) contains pyrite stringers in an aphanitic and chloritic volcanic rock that is intensely fractured and iron stained. The highest pyrite contents (less than 10%) occur in the most intensely fractured rocks.

GEOCHEMICAL DATA:

A grab sample from the trench (42-4-103B) yielded 30 ppb Au and 220 ppm Cu.

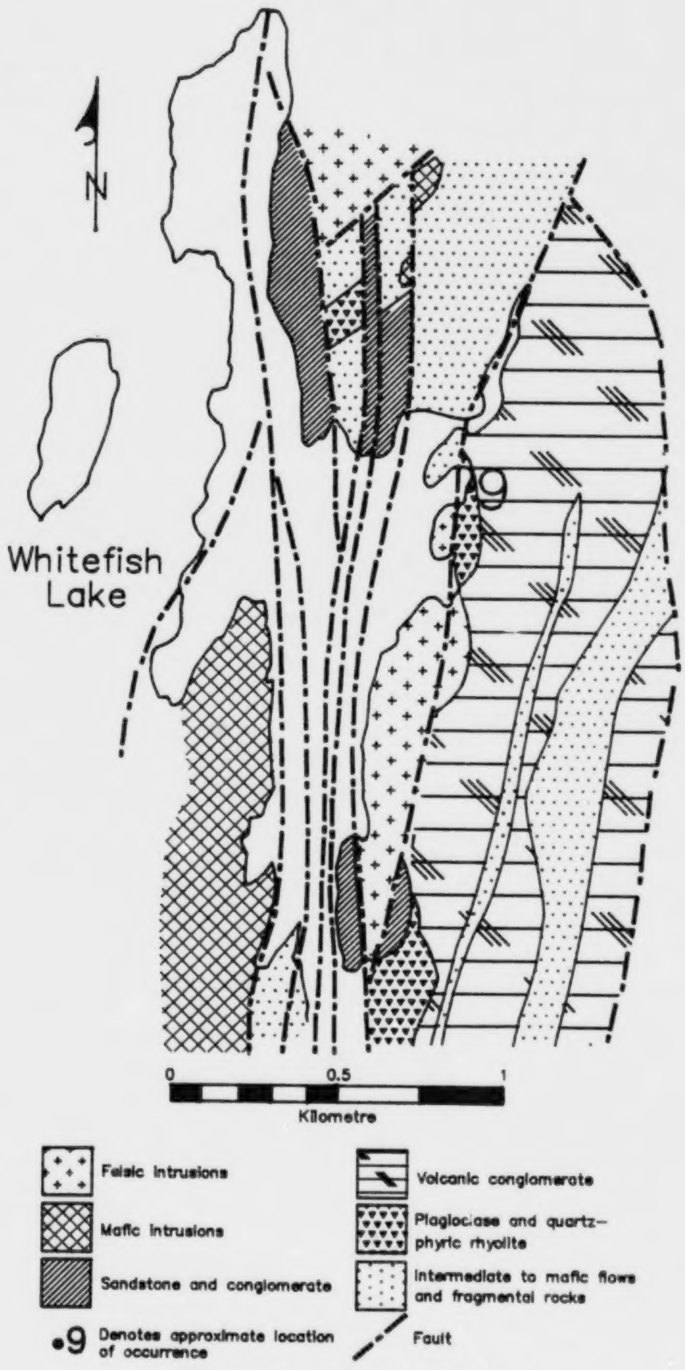
CLASSIFICATION:

Veins of sulphide that may be associated with a zone of faulting.

REFERENCES:

Bailes A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile, geological map; Geological Survey of Canada, Ottawa.


N
Whitefish Lake
9
0
0.5
1
Kilometre
Felsic intrusions
Mafic intrusions
Sandstone and conglomerate
•9 Denotes approximate location of occurrence
Volcanic conglomerate
Plagioclase and quartz-phyric rhyolite
Intermediate to mafic flows and fragmental rocks
Fault

Geology by A.H. Bailes and E.C. Syme (1987)

Figure 9-2: Geological setting of occurrence #9 (63K/13SE).

DEPOSIT: 10 NAME:

UTM: 6071846N 330852E AREA: Birch Bay, Lake Athapapuskow AIRPHOTO: A26328-193

ACCESS:

Via Highway 10A to North Star Road.

EXPLORATION SUMMARY:

An EM conductor on the Smoke 1 claim was drilled by H.B.E.D. in 1953. Additional holes were drilled on the southward extension of the conductive zone by A.L. Parres for Pinebay Mines in 1977.

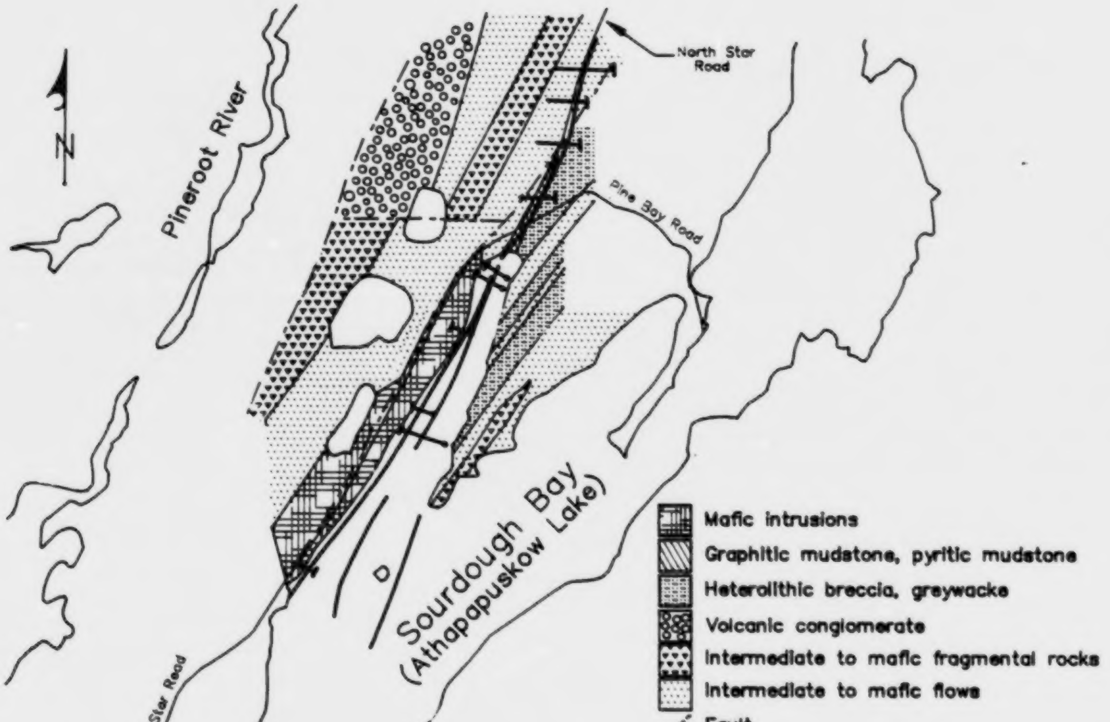
GEOLOGICAL SETTING:

The EM conducting rocks underlie Birch Bay and a small valley filled with glacial deposits and muskeg. A gabbroic dyke is exposed along the western margin of Birch Bay. Heterolithic breccias with minor intermediate flows are exposed along the road to the Pinebay Mine (Fig. 10-1). Core from a drill hole at the north end of Birch Bay contained abundant strata of interlayered siltstone, sandstone, argillitic siltstone and iron sulphide and a short untested EM conductor (Fig. 10-2).

MINERALIZATION:

Mineralization observed in core (courtesy A.L. Parres, 1978) consisted mainly of numerous layers of solid to near solid pyrite and/or pyrrhotite with and without graphite in layers up to 50 cm thick; most of the layers were 10-30 cm thick. Disseminated sulphides (generally pyrite) are common in layers of siltstone, argillite and sandstone.

Veinlets and disseminations of pyrite are present in several small exposures on the eastern shore at the extreme northeast corner of Birch Bay (Fig. 10-1). This mineralization resembles a weakly developed massive



N
Pineroot River
North Star Road
Pine Bay Road
Sourdough Bay (Athapapuskow Lake)
North Star Road
0
0.5
1
Kilometre
Mafic intrusions
Graphitic mudstone, pyritic mudstone
Heterolithic breccia, greywacke
Volcanic conglomerate
Intermediate to mafic fragmental rocks
Intermediate to mafic flows
Fault
Geophysical conducter
4 DDH's by H.B.E.D. (A.F. 90455)
6 DDH's by Pineroot Mines Ltd. (A.L. Parres, per. comm., 1987)
Geology by A.H. Bailes and E.C. Syme (1987).

Figure 10-1: Geological setting of the Birch Bay area.

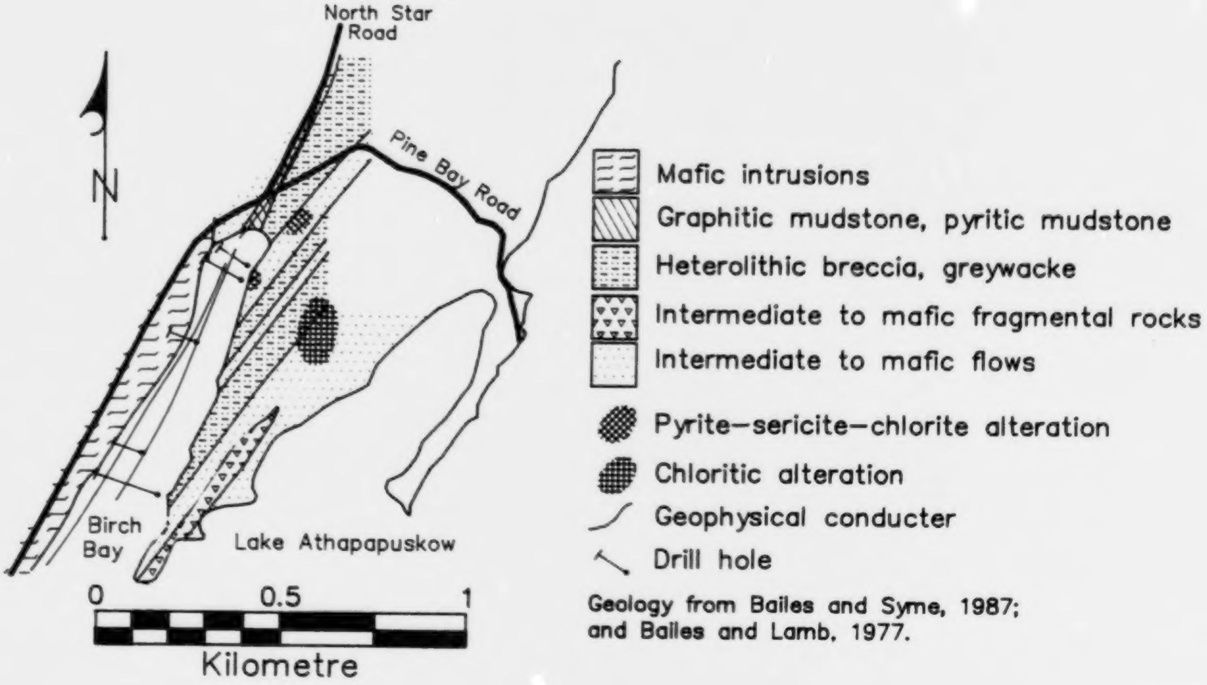

North Star Road
Pine Bay Road
N
Birch Bay
Lake Athapapuskow
0
0.5
1
Kilometre
Mafic intrusions
Graphitic mudstone, pyritic mudstone
Heterolithic breccia, greywacke
Intermediate to mafic fragmental rocks
Intermediate to mafic flows
Pyrite—sericite—chlorite alteration
Chloritic alteration
Geophysical conducter
Drill hole
Geology from Bailes and Syme, 1987;
and Bailes and Lamb, 1977.

Figure 10-2: Alteration in the Birch Bay area.

sulphide-type alteration system. A 25 cm core section in one of the holes drilled at the north end of Birch Bay by Pinebay Mines consisted of pyrite and quartz typical of a massive sulphide deposit; it occurs east of the pyrite-graphite layers and west of the alteration system.

The extensive conductors, considerable thicknesses of pyrite and graphite (20 m of near solid sulphide in hole 9 of AF 90455), the probable alteration zone on the east shore of Birch Bay as well as abundant siltstones and argillaceous rocks suggest an environment and stratigraphic position similar to that of the Centennial Mine to the south. Consequently, this area has the potential to contain copper-zinc-bearing massive sulphide deposits.

GEOCHEMICAL DATA:
None

CLASSIFICATION:
Sulphide and graphite strata forming formational conductors are probably chemical sediments related to extensive hydrothermal activity. The altered rocks on the east shore of Birch Bay require detailed investigation to determine if they are indeed geochemically similar to alteration zones associated with massive sulphide deposits.

REFERENCES:

Assessment File 90455
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H., and Lamb, C.
1977: Geology of the Pine Bay Area; unpublished geological map, Geological Services Branch, Manitoba Energy and Mines.

Bailes, A. H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

LOCATION: 11 NAME: MUD LAKE/LEO LAKE

UTM: 6074040N 334997E AREA: Leo Lake AIRPHOTO: A26328-16

ACCESS:

Via Highway 10A, North Star Lake Road and either boat from Thompson Lake to Flintoba Lake or trail from North Star Road at Flintoba Creek.

EXPLORATION SUMMARY:

Originally staked by E. Brydges in 1920. Various surface work was undertaken up to 1927. In 1928 the property was optioned to Flintoba Mines Limited who discovered up to 7.9% Cu over a 1 m width in a zone 400 m east of the discovery zone. H.B.E.D. optioned the property in 1950 and drilled 7 holes. Gods Lake Gold Mines drilled 17 holes with a total length of 1748 m in 1955. A horizontal loop EM survey was conducted and a hole drilled by Guggenheim Exploration in 1967. Since 1976 the property was held by Pinebay Mines Ltd. and is currently under option to Granges Ltd.

GEOLOGICAL SETTING:

The area is underlain by dacitic to rhyolitic volcanic rocks that include both aphyric and quartz- and quartz-feldspar-phyric varieties. These rocks have been intruded by medium grained quartz-feldspar porphyry, granodiorite and gabbroic rocks (Fig. 11-1).

MINERALIZATION:

The occurrence consists of an extensive area of altered felsic volcanic rocks with disseminations and veins of sulphides exposed in a number of trenches. Pyrite, chalcopyrite and sphalerite are present in the two more intensely altered and mineralized areas that are centred on the northeast corner of Flintoba Lake (west zone) and southwest of Leo Lake (east zone).

Several small pits near the shoreline at Flintoba Lake and a number of rusty weathered outcrops constitute the west zone. Sulphide veins up to 10 cm thick consisting of pyrite and chalcopyrite are present in the trenches. The rusty weathered outcrops are altered felsic volcanic rocks containing sericite, chlorite and up to 10% pyrite; locally they also contain small veinlets and veins of pyrite and chalcopyrite that appear to be fracture controlled (mobilizate). Holes 1-5 (West Zone) intersected mostly altered felsic rocks, sericitic and chloritic schists with minor pyrite, one section of near solid pyrite 18 m long, and several sections of rhyolitic breccia and quartz veins. A number of sections in the logs are referred to as "siliceous". There is no indication that the core was assayed for gold.

The east zone consists of several large outcrops that are intensively altered and mineralized. Chalcopyrite and sphalerite are common in the small veins exposed in trenches in this area. Seventeen holes drilled by God's Lake Mines Ltd. intersected sulphides with significant copper and zinc (Fig. 11-3).

The drill logs report that the sulphides occur mainly as disseminations, veinlets and blebs. One 1.8 m intersection of 50-75% sulphide (Hole 16) is considered to be an oblique intersection of a sulphide vein since holes a few feet away intersected only 30 cm of near solid sulphide. The sulphide-bearing sections generally contain less than 20% sulphide; however, several short sections contained more than 10% chalcopyrite.

GEOCHEMICAL DATA:

In 1980 approximately 100 samples were collected during a systematic rock geochemical survey of the area. All samples were analyzed for Na, Mg, Cu, Zn and 75 samples were also analyzed for Au. The information suggests that the anomalous gold values (249 and 199 ppb Au) are not associated with the known Cu and Zn mineralization. In addition, a number of whole rock analyses have been completed and will be presented in separate open files on this area.

CLASSIFICATION:

1. The extensive alteration in surface exposures and the nature of the mineralization observed in the trenches and reported in the drill logs suggests that this mineralization represents a massive sulphide type alteration zone. There is no indication at present to suggest that a lens of solid sulphide was encountered. Detailed mapping of the area has been undertaken in an effort to establish stratigraphic tops, to predict where the stratigraphic top of the alteration zone lies and thus the stratigraphic position of any potential solid sulphide lenses.
2. The presence of extensive alteration at the north end of Flintoba Lake, the recording of breccias and quartz veins in drill logs from the west zone, the indication of a fault zone beneath Flintoba Lake, the indication of a gold occurrence north of the west zone on the old geology maps and the projection of the gold-bearing shear at the Alberts Lake zone through the area together indicate that the area has the potential to contain gold mineralization.

REFERENCES:

Assessment File: West Zone - 90434, 91481, 92373 East Zone - 90427, 90453
Manitoba Energy and Mines, Minerals Division.

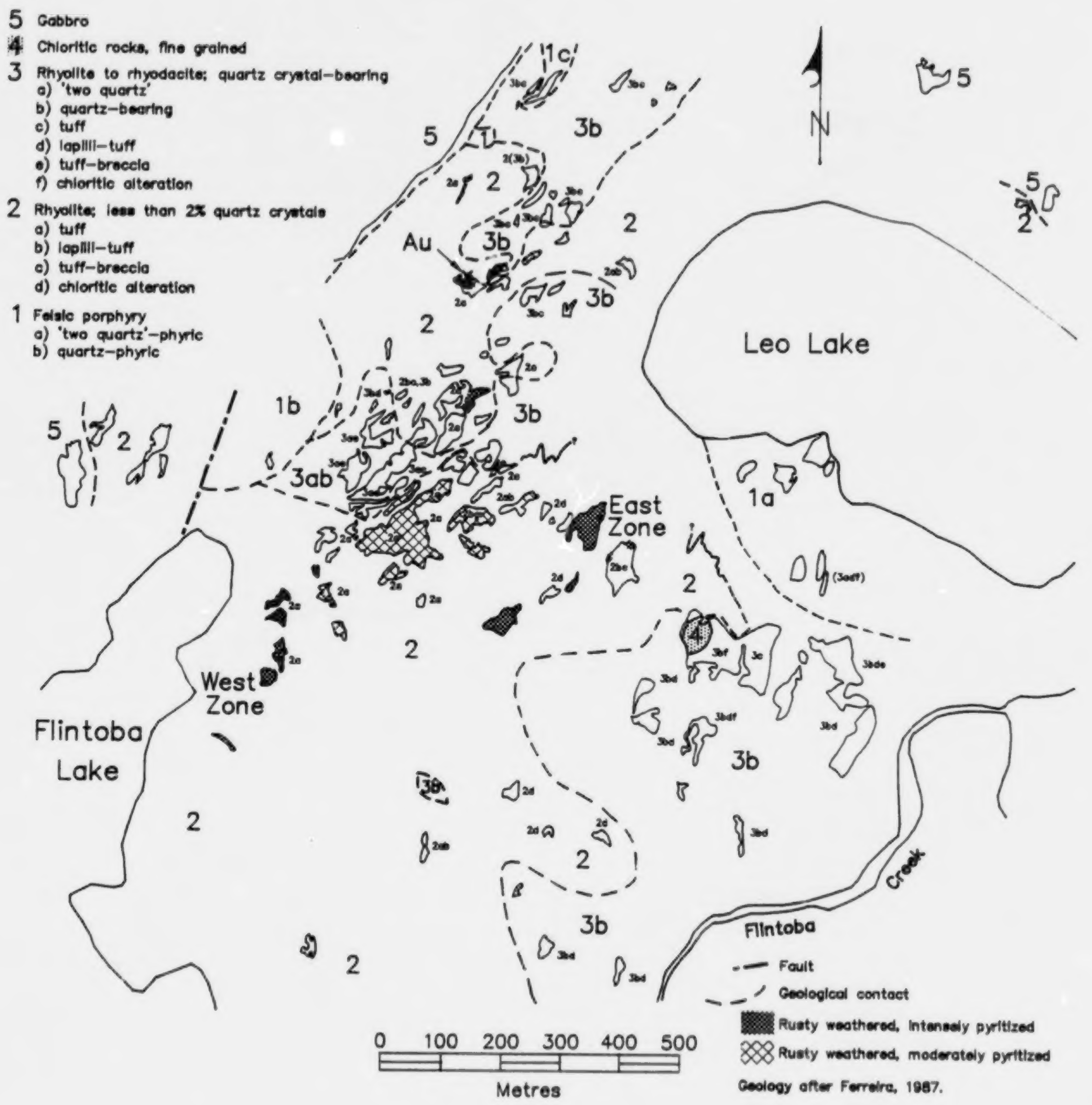

5 Gabbro
4 Chloritic rocks, fine grained
3 Rhyolite to rhyodacite; quartz crystal-bearing
a) 'two quartz'
b) quartz-bearing
c) tuff
d) lapilli-tuff
e) tuff-breccia
f) chloritic alteration
2 Rhyolite; less than 2% quartz crystals
a) tuff
b) lapilli-tuff
c) tuff-breccia
d) chloritic alteration
1 Felsic porphyry
a) 'two quartz'-phyric
b) quartz-phyric
N
Leo Lake
Au
East Zone
West Zone
Flintoba Lake
Flintoba Creek
1a
1b
1c
2
3b
3ab
5
Fault
Geological contact
Rusty weathered, intensely pyritized
Rusty weathered, moderately pyritized
0 100 200 300 400 500
Metres
Geology after Ferreira, 1987.

Figure 11-1: Geology of the Leo Lake occurrence (#11 - 63K/13SE).

Bateman, J.D. and Harrison, J. M.
1945: Mikanagan Lake, Map 832A; one inch to one mile Geological Map; Geological Survey of Canada, Ottawa.

Ferreira, K.
1987: Geology of the Leo Lake area; in Manitoba Energy & Mines, Report of Field Activities 1987, GS-14

Mineral Inventory Card
Manitoba Energy and Mines, Minerals Division.

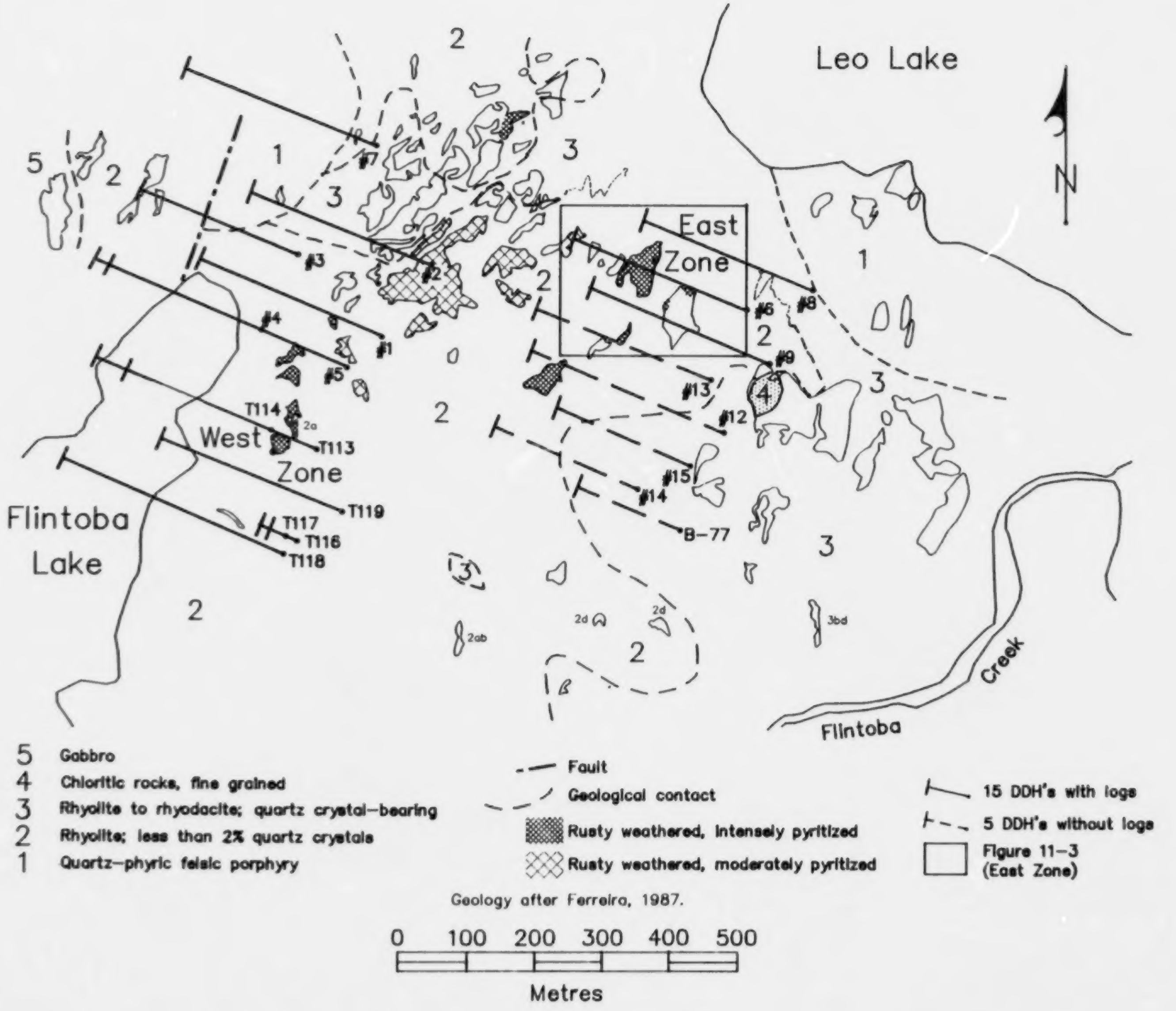

Leo Lake
N
East Zone
West Zone
Flintoba Lake
Flintoba Creek
#1
#2
#3
#4
#5
#6
#7
#8
#9
#12
#13
#14
#15
B-77
T113
T114
T116
T117
T118
T119
1
2
3
4
5
2a
2ab
2d
3bd
5 Gabbro
4 Chloritic rocks, fine grained
3 Rhyolite to rhyodacite; quartz crystal-bearing
2 Rhyolite; less than 2% quartz crystals
1 Quartz-phyric felsic porphyry
Fault
Geological contact
Rusty weathered, intensely pyritized
Rusty weathered, moderately pyritized
15 DDH's with logs
5 DDH's without logs
Figure 11-3 (East Zone)
Geology after Ferreira, 1987.
0
100
200
300
400
500
Metres

Figure 11-2: Location of holes drilled by H.B.E.D. at occurrence #11 (63K/13SE).

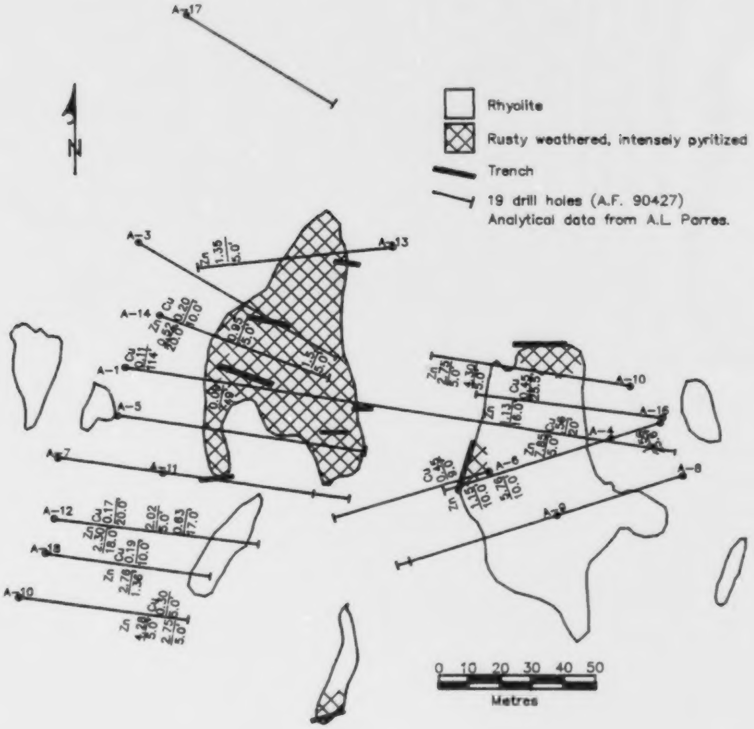

A-17
N
Rhyolite
Rusty weathered, intensely pyritized
Trench
19 drill holes (A.F. 90427)
Analytical data from A.L. Parres.
A-3
A-13
Zn 1.35 5.0
A-14
Cu 0.20 10.0
Zn 0.52 20.0
0.95 5.0
1.5 5.0
A-1
Cu 0.11 114
A-5
A-7
A-11
A-12
Cu 0.17 20.0
Zn 2.30 18.0
2.02 5.0
0.83 17.0
A-18
Cu 0.19 10.0
Zn 2.78 1.36
A-10
Cu 0.30 5.0
Zn 4.28 5.0
2.75 5.0
A-10
Zn 2.73 5.0
4.30 5.0
Cu 0.45 35.5
Zn 1.13 16.0
A-16
A-4
Zn 7.85 5.0
A-6
Zn 1.15 10.0
5.79 10.0
A-8
A-9
0 10 20 30 40 50
Metres

Figure 11-3: Location of holes drilled by God's Lake Mines Ltd. at occurrence #11 (63K/13SE).

LOCATION: 12 NAME:

UTM: 6075517N 331456E AREA: Small lake approximately 1.3 km east of Mikanagan Lake. AIRPHOTO: A26328-170

ACCESS:

Via Kississing Lake Road to Lac Aimee Road, boat to Mikanagan Lake and 1.5 km east on foot.

HISTORY:

N.H. Thurber drilled six holes on the Aimee 2 claim and one on Aimee 11 in 1951 for a total of 237 m. A 108 m hole drilled by Exploration Projects Ltd. was completed in 1956 on the IMA 7 property. Pineroot Mineral Enterprises drilled a 164 m hole on Mik 4 in 1967.

GEOLOGICAL SETTING:

The area is underlain by andesitic and felsic volcanic rocks that have been intruded by narrow dykes of diorite.

MINERALIZATION:

Sparse disseminated pyrite is reported from the drill logs. Hole No. 5 (A.F. 90402) intersected 1.5 m of "quartz carrying pyrite, pyrrhotite and chalcopyrite". Quartz and carbonate stringers and chloritization were noted (A.F. 91489).

GEOCHEMICAL DATA:

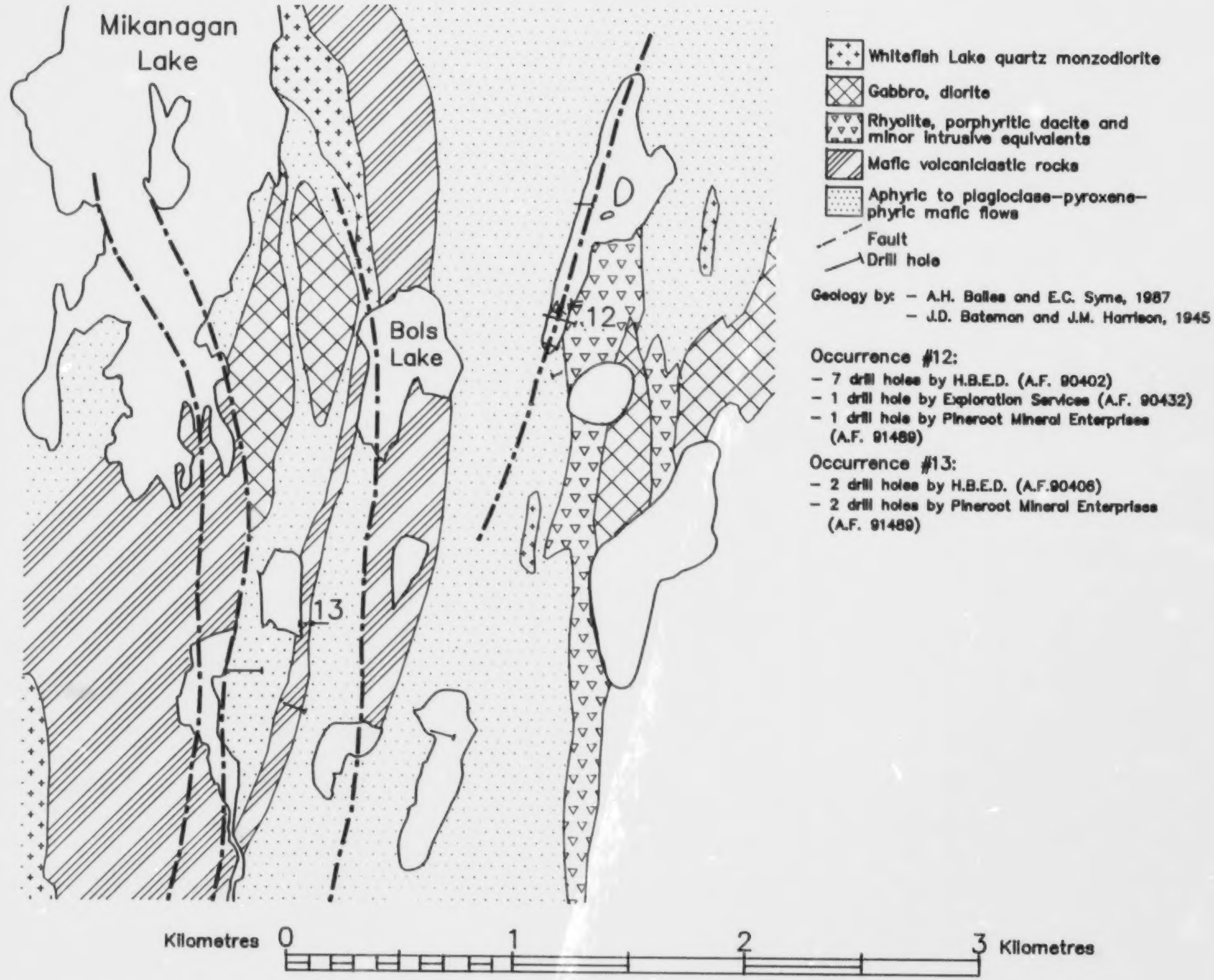
None

CLASSIFICATION:

Uncertain; probably a vein system.

REFERENCES:

Assessment Files: 90402, 90432, 91489
Manitoba Energy and Mines, Minerals Division.


Mikanagan Lake
Bois Lake
12
13
Whitefish Lake quartz monzodiorite
Gabbro, diorite
Rhyolite, porphyritic dacite and minor intrusive equivalents
Mafic volcaniclastic rocks
Aphyric to plagioclase-pyroxene-phyric mafic flows
Fault
Drill hole
Kilometres
0
1
2
3
Kilometres

Geology by: – A.H. Bailes and E.C. Syme, 1987
– J.D. Bateman and J.M. Harrison, 1945

Occurrence #12:
- 7 drill holes by H.B.E.D. (A.F. 90402)
- 1 drill hole by Exploration Services (A.F. 90432)
- 1 drill hole by Pineroot Mineral Enterprises (A.F. 91489)

Occurrence #13:
- 2 drill holes by H.B.E.D. (A.F.90406)
- 2 drill holes by Pineroot Mineral Enterprises (A.F. 91489)

Figure 12-1: Geological setting of occurrences 12 and 13 (63K/13SE).

LOCATION: 13

NAME:

UTM: 6074158N 330454E

AREA: 300 m southeast of Mikanagan Falls,
Pineroot River

AIRPHOTO: A26328-170

ACCESS:

Via North Star Road, canoe across Whitefish Lake and up Pineroot River.

HISTORY:

H.B.E.D. drilled two holes totalling 290 m on the Bear 9 and 13 claims in 1953. In 1967, Pineroot Mineral Enterprises drilled in 213 m two holes on the Mik 8 and 20 claims totalling.

GEOLOGICAL SETTING:

The area is underlain by aphyric to plagioclase-pyroxene phyric flows, and mafic lapilli tuff/tuff breccia. Diorite and quartz diorite stocks are present on the west side of Bois Lake (Fig. 13-1; Bailes and Syme, 1987).

MINERALIZATION:

H.B.E.D. recorded a 75 cm thick section of near solid pyrite, pyrrhotite and trace chalcopyrite in dacite with quartz and carbonate stringers in Hole 7. Hole 6 intersected a number of intervals of dacite with minor pyrite and pyrrhotite mineralization. Pineroot Mineral Enterprise logs for Hole 3 report 10-25% pyrite, 1% pyrrhotite ± chalcopyrite occurring in brecciated and/or sheared andesite. Hole 4 did not intersect a possible conductor

GEOCHEMICAL DATA:

Pineroot Mineral Enterprise obtained assays of 0.13% Cu and 0.14 oz. Ag from drill hole 3.

CLASSIFICATION:

Probably sulphide stratum intersected in drill hole 7. Mineralization in drill holes 6 and 3 is probably related to faulting and silicification.

REFERENCES:

Assessment File 90406
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of Flin Flon-White Lake Area. Manitoba Energy and Mines, Geological Services Branch, Geological Map GR87-1-1.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, 1 inch equals 1 mile geological map; Geological Survey of Canada, Ottawa.

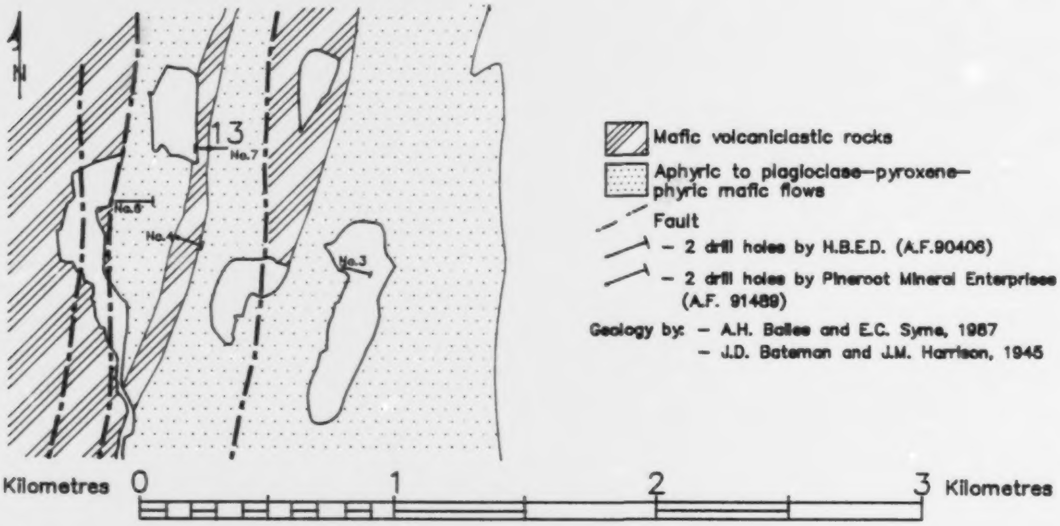

N
13
No.7
No.6
No.4
No.3
Mafic volcaniclastic rocks
Aphyric to plagioclase-pyroxene-phyric mafic flows
Fault
– 2 drill holes by H.B.E.D. (A.F.90406)
– 2 drill holes by Pineroot Mineral Enterprises (A.F. 91489)
Geology by: – A.H. Bailes and E.C. Syme, 1987
– J.D. Bateman and J.M. Harrison, 1945
Kilometres
0
1
2
3
Kilometres

Figure 13-1: Detailed geology, and drill hole locations at occurrence #13 (63K/13SE).

LOCATION: 14

NAME:

UTM: 6074911N 335698E

AREA: Approximately 100 m from the southwest end of Alberts Lake

AIRPHOTO: A20040-145

ACCESS:

Via North Star Lake Road to Thompson Lake, by boat to Flintoba Lake, trail from north end of Flintoba Lake or by trail from North Star Road at Flintoba Creek.

EXPLORATION SUMMARY:

Gold occurrence indicated on Bateman and Harrison's (1945) geological map (Fig. 14-1). The trenches were dug by the Thompson Brothers (W. Hanna, pers. comm., Flin Flon, 1981).

GEOLOGICAL SETTING:

The area is covered by a small sand plain and small outcrops of a medium grained gabbro are exposed throughout the area (Fig. 14-2). The rocks are part of the large body of gabbro at Alberts Lake (Bateman and Harrison, 1945).

MINERALIZATION:

Milky to grey quartz veins (0.2 to 0.5 m thick) occur in gabbro. Along the margins of the quartz veins the gab-

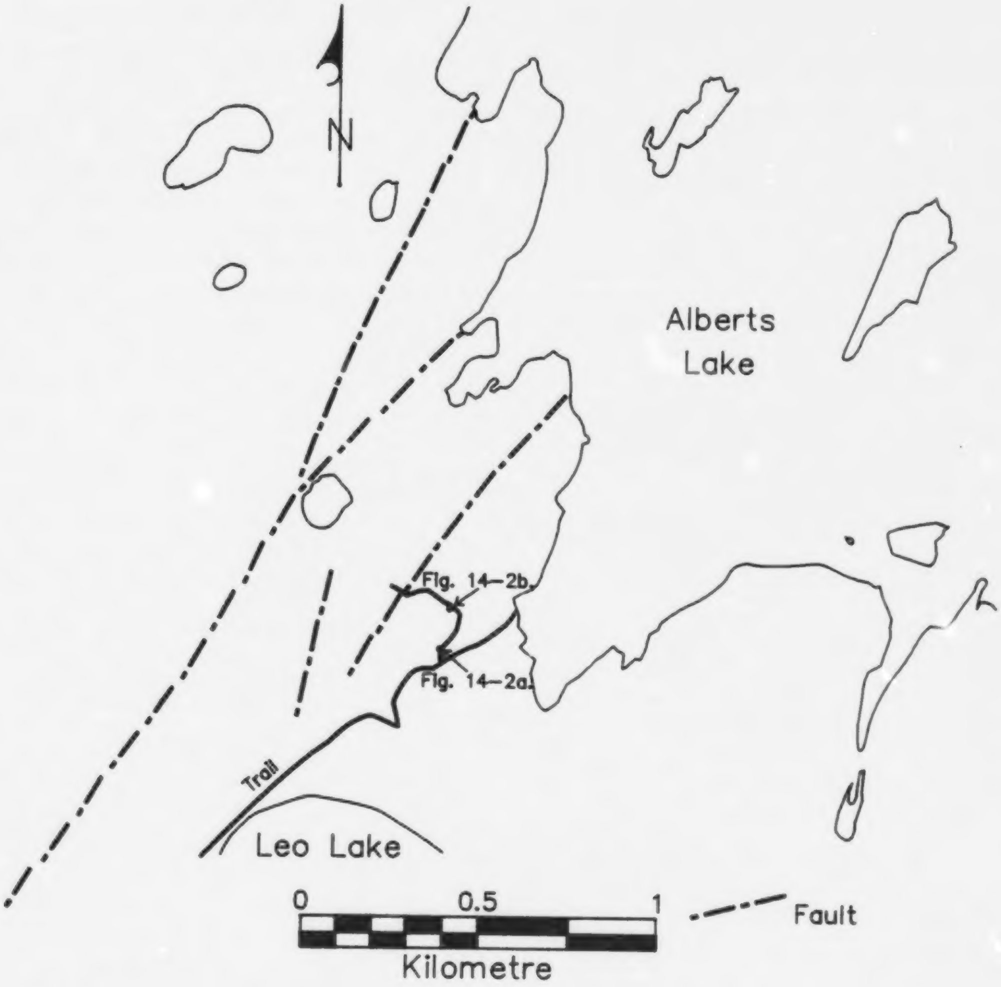


Figure 14-1: Location of mineral occurrence #14 (63K/13SE).

bro has been sheared and partly replaced by carbonate. Less than 5% pyrite is present in both the quartz veins and the altered gabbro. The area has not been mapped in detail.

GEOCHEMICAL DATA:

Mr. W. Hanna obtained 0.6 oz/ton Au from grab samples of the quartz (pers. comm. 1981).

CLASSIFICATION:

This occurrence appears to have been a tensional vein filling that was subjected to later shearing of the gabbro along the margins of the quartz veins.

REFERENCES:

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A; one inch to one mile; Geological Survey of Canada, Ottawa.

Mineral Inventory Card 63K/13 Au7
Manitoba Energy and Mines, Minerals Division.

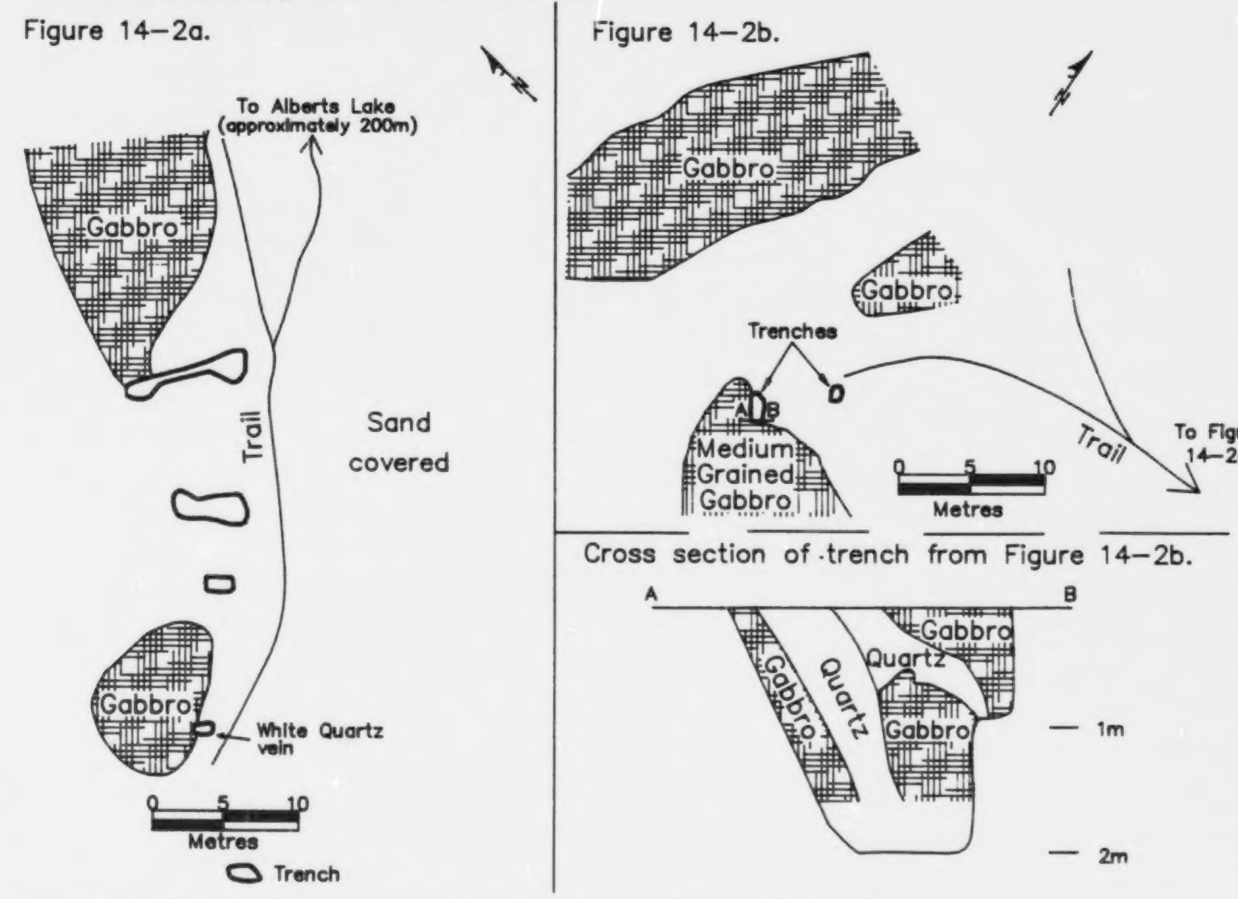


Figure 14—2a.
To Alberts Lake
(approximately 200m)
Gabbro
Trail
Sand
covered
Gabbro
White Quartz
vein
0
5
10
Metres
Trench
Figure 14—2b.
Gabbro
Gabbro
Trenches
A
B
D
Medium
Grained
Gabbro
0
5
10
Metres
Trail
To Figure
14—2a.
Cross section of trench from Figure 14—2b.
A
B
Gabbro
Gabbro
Quartz
Quartz
Gabbro
1m
2m

Figure 14-2: Detailed geology, and trench locations at occurrence #14 (63K/13SE).

LOCATION: 15 NAME: WALLY

UTM: 6075551N 335637E AREA: West of Alberts Lake AIRPHOTO: A20040-145

ACCESS:

Via North Star Road and trail from Flintoba Creek.

EXPLORATION DATA:

Indicated as a gold occurrence on the Wally claims by Bateman and Harrison(1945). Reported by W. Hanna (pers. comm. Flin Flon, 1981) to have been worked by the Thompson Brothers in the 1940s. The material extracted from the trenches was probably hauled to Flin Flon for milling.

GEOLOGICAL SETTING:

Trenches are located in a medium grained gabbro that forms part of a large mafic intrusion at the south end of Alberts Lake (Bateman and Harrrison, 1945).

MINERALIZATION:

A 20-120 cm thick quartz vein with minor pyrite is exposed in the end and bottoms of several trenches (Fig. 15-2). The altered gabbro is schistose for 20-50 cm on either side of the quartz vein. Shearing of the altered (chloritized) gabbro appears to have postdated formation of the quartz vein. A 15-20 cm thick pyritic shear zone was observed at the south end of the trenches.

GEOLOGICAL DATA:

The average grade of the material removed from these trenches is reported to have been 0.5 oz/ton Au (W. Hanna, per. comm., 1981). Granges Ltd. estimated 100 tonnes of 16 g/tonne Au has been removed (Ed. Fluskey, pers. comm. Flin Flon, 1987).

CLASSIFICATION:

Quartz-filled tension fracture in gabbro.

REFERENCES:

Bateman, J.D. and Harrison, J.M.

1945: Mikanagan Lake, Map 832A; one inch to one mile; Geological Survey of Canada, Ottawa.

Mineral Inventory Card 63K/13 Au7

Manitoba Energy and Mines, Minerals Division.

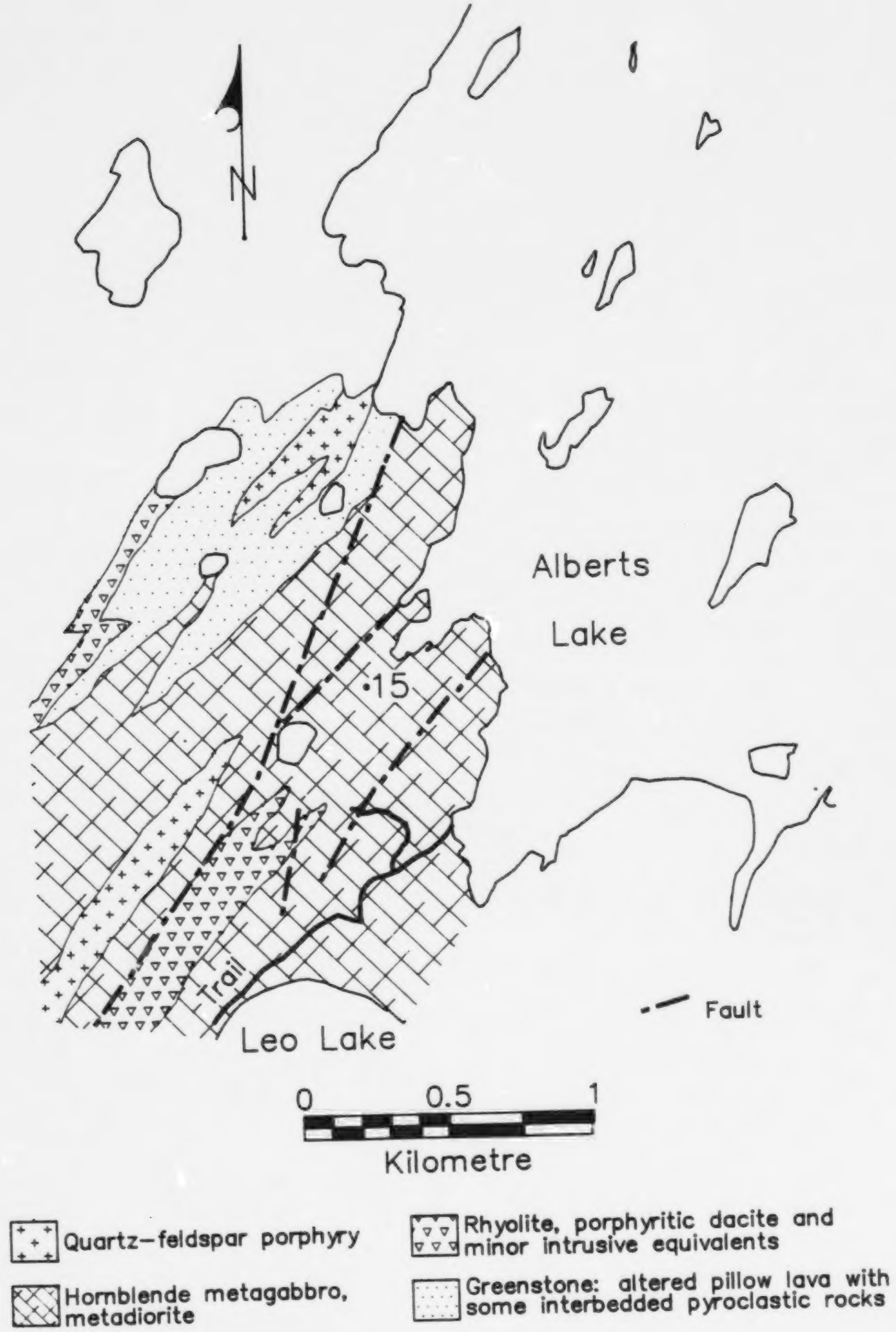

N
Alberts
Lake
·15
Trail
Leo Lake
Fault
0
0.5
1
Kilometre
Quartz–feldspar porphyry
Rhyolite, porphyritic dacite and minor intrusive equivalents
Hornblende metagabbro, metadiorite
Greenstone: altered pillow lava with some interbedded pyroclastic rocks

Figure 15-1: Geological setting of occurrence #15 (63K/13SE). Geology after Bateman and Harrison (1945).

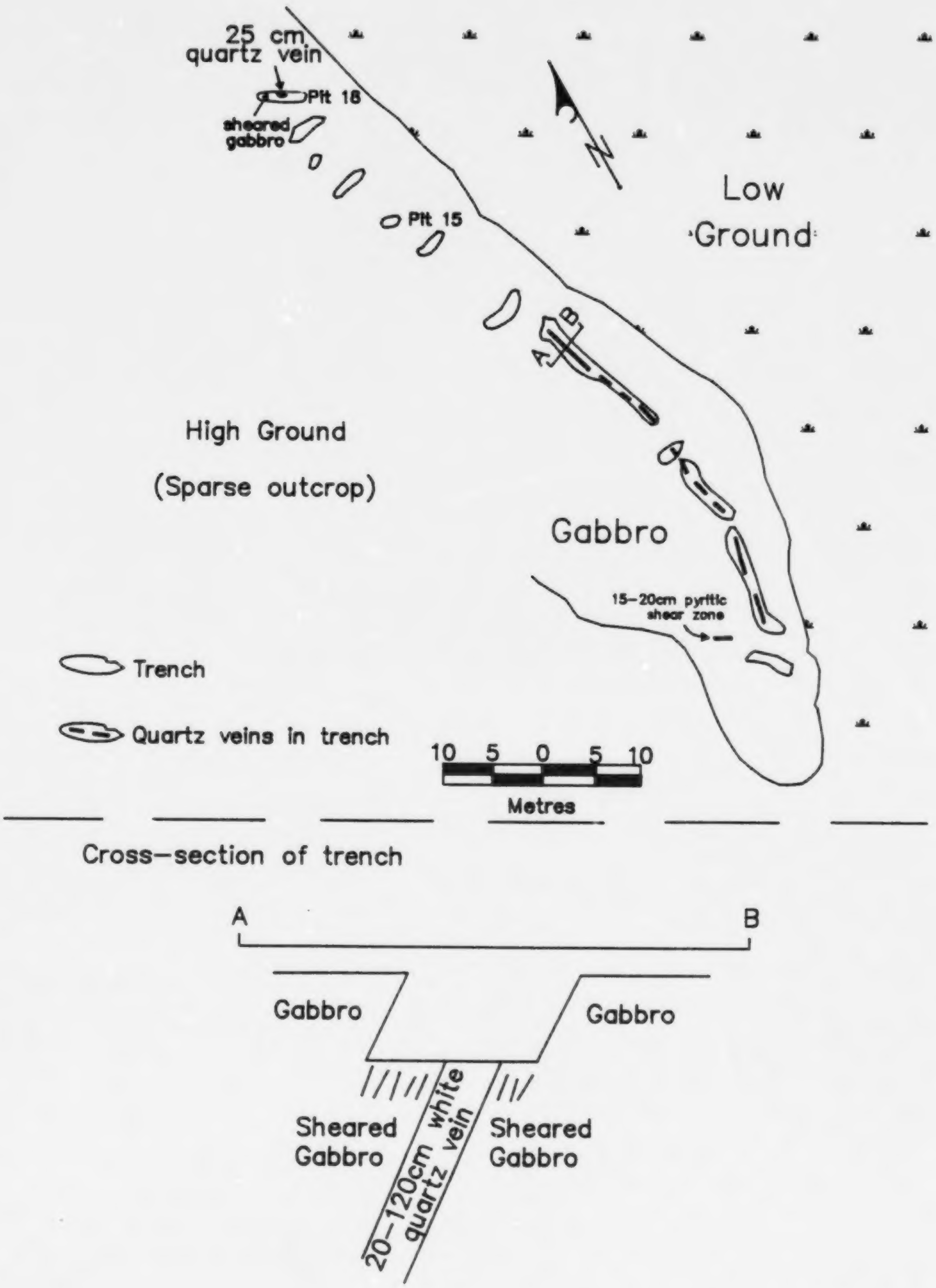

25 cm
quartz vein
Pit 18
sheared
gabbro
Pit 15
N
Low
Ground
A
B
High Ground
(Sparse outcrop)
Gabbro
15–20cm pyritic
shear zone
Trench
Quartz veins in trench
10 5 0 5 10
Metres
Cross–section of trench
A
B
Gabbro
Gabbro
Sheared
Gabbro
Sheared
Gabbro
20–120cm white
quartz vein

Figure 15-2: Detailed geology, and trench locations at occurrence #15 (63K/13SE).

LOCATION: 16

NAME: ALBERTS LAKE

UTM: 6075263N 3353003

AREA: North of Leo Lake and west of south end of Alberts Lake

AIRPHOTO: A20040-145

ACCESS:

Via North Star Road, trail from Flintoba Creek to Alberts Lake.

EXPLORATION DATA:

Gold occurrence indicated by Bateman and Harrison (1945). A number of trenches were put down by the Thompson brothers (W. Hanna, pers. comm. 1981) during the 1940s (?). There is little rubble around the trenches and it is presumed that bulk samples were hauled to the Flin Flon smelter.

GEOLOGICAL SETTING:

The trenches were put down in an area of gabbroic rocks that are part of the Alberts Lake gabbro (Bateman and Harrison, 1945). A small felsic intrusion is exposed to the west of this area where it intrudes the gabbro. Rhyolitic volcanic rocks, which are exposed several hundred metres southeast of the occurrence, are probably part of the felsic centre exposed at Leo Lake (Location #11).

MINERALIZATION:

Two 15 cm thick quartz veins are exposed in the northernmost trench approximately 90 m south of the small pond. The fine grained mafic rocks may be altered andesite. The rocks contain 2-3% pyrite and locally are chlorite schists.

Diamond drilling by Granges Ltd. has revealed the presence of a zone of gold mineralization beneath a small valley immediately west of the ridge containing the trenches. This mineralized zone consists of quartz veins and pyritic sheared rocks in a major shear zone that can be traced via topographic depressions from Alberts Lake to Flintoba Lake. The gold occurrence near Leo Lake that was indicated by Bateman and Harrison (1945) occurs close to the southwestward projection of this shear zone (cf. Fig. 11-1, 63K/13SE).

GEOCHEMICAL DATA:

Four chip samples from the northernmost trench returned less than 0.02 oz./ton Au. Reserves are estimated at 400 000 tonnes of 7.3 grams/tonne Au (Ed. Fluskey, Granges Ltd., pers. comm. Flin Flon, 1987).

CLASSIFICATION:

Vein-type tensional fillings in chlorite schists.

REFERENCES:

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A; one inch to one mile; Geological Survey of Canada, Ottawa.

Mineral Inventory Card 63K/13 Au7
Manitoba Energy and Mines, Minerals Division.

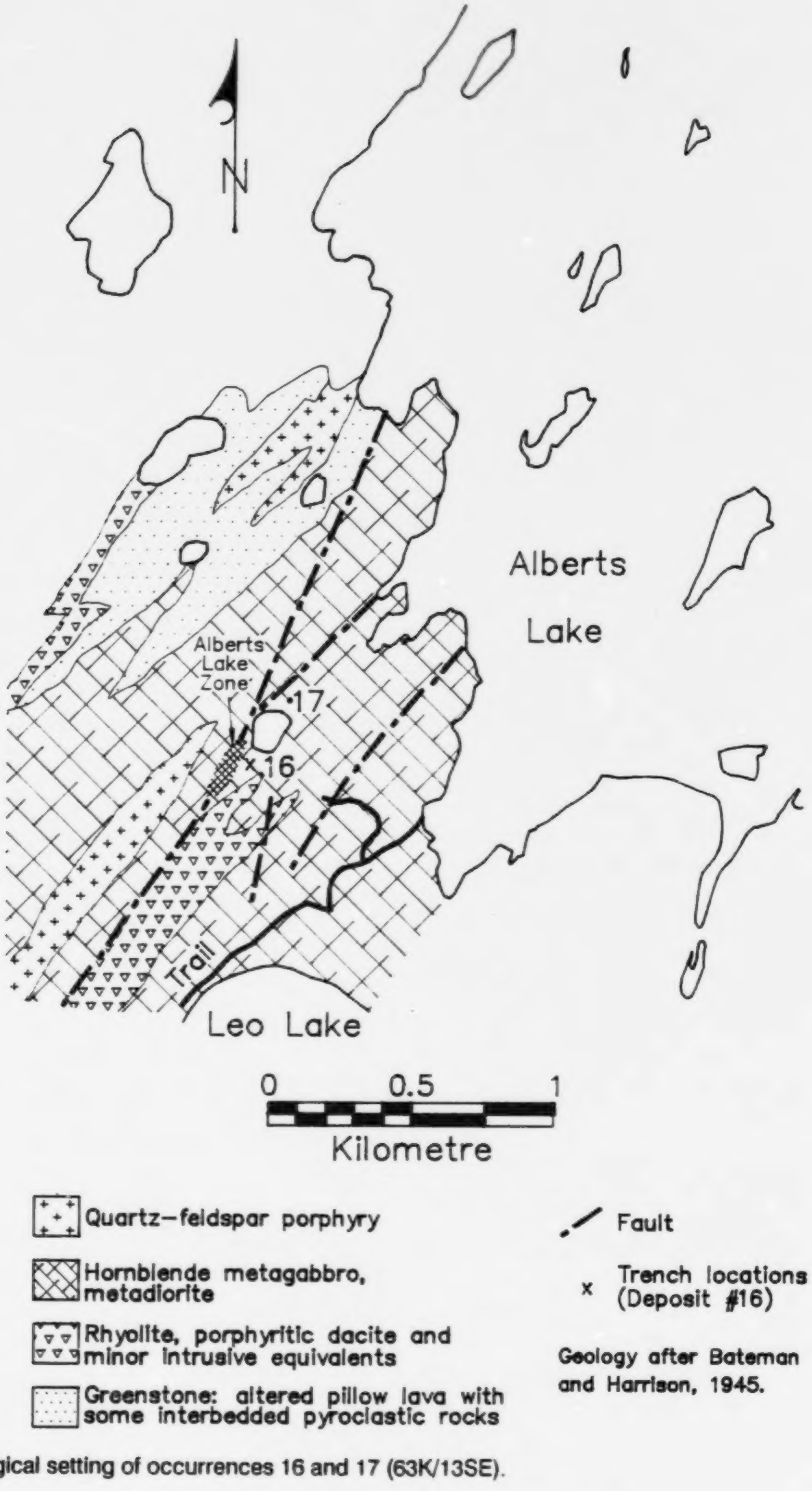

N
Alberts Lake
Alberts Lake Zone
17
16
Trail
Leo Lake
0
0.5
1
Kilometre
Quartz–feldspar porphyry
Hornblende metagabbro, metadiorite
Rhyolite, porphyritic dacite and minor intrusive equivalents
Greenstone: altered pillow lava with some interbedded pyroclastic rocks
Fault
Trench locations (Deposit #16)
Geology after Bateman and Harrison, 1945.

Figure 16-1: Geological setting of occurrences 16 and 17 (63K/13SE).

LOCATION: 17 NAME:

UTM: 6075480N 3355193 AREA: West of the south end of Alberts Lake AIRPHOTO: A20040-145

ACCESS:

Via North Star Road and trail from Flintoba Creek to Alberts Lake.

EXPLORATION SUMMARY:

Occurrence noted by Bateman and Harrison (1945). Small pits probably put down by Thompson brothers in the 1940s.

GEOLOGICAL SETTING:

Large gabbroic body near Alberts Lake (see Fig. 15-1 63K/13SE) delineated by Bateman and Harrison (1945).

MINERALIZATION:

A white quartz vein approximately 30 cm thick with a trace amount of molybdenite, pyrite and chalcopyrite occurs in a pit (2 x 1.5 x 0.5 m) at the northern edge of an outcrop of gabbro. A pit (2 x 1.0 x 0.5 m) at the north edge of the swamp surrounding the small pond exposed quartz veins in diorite.

GEOCHEMICAL DATA:

None

CLASSIFICATION:

Quartz-filled tension fracture.

REFERENCES:

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A; one inch to one mile; Geological Survey of Canada, Ottawa.

Mineral Inventory Card 63K/13 Au7
Manitoba Energy and Mines, Minerals Division.

LOCATION: 18 NAME:

UTM: 607457N 335773E AREA: West shore of Alberts Lake AIRPHOTO: A20040-145

ACCESS:

Via North Star Road, boat and on foot or by plane to Alberts Lake.

EXPLORATION SUMMARY:

Gold occurrence indicated by Bateman and Harrison (1945). The area formed part of the Wally claims until 1947. Subsequently restaked a number of times; however, there is little open assessment work on file for this area.

GEOLOGICAL SETTING:

A 3 x 2 m shoreline exposure of quartz-feldspar porphyry contains small veinlets of quartz and rusty weathering fractures (Fig. 18.-1). No evidence of trenching was found during a brief search of the area.

MINERALIZATION:

Minor pyrite occurs on fractures in quartz-feldspar porphyry.

GEOCHEMISTRY:

None

CLASSIFICATION:

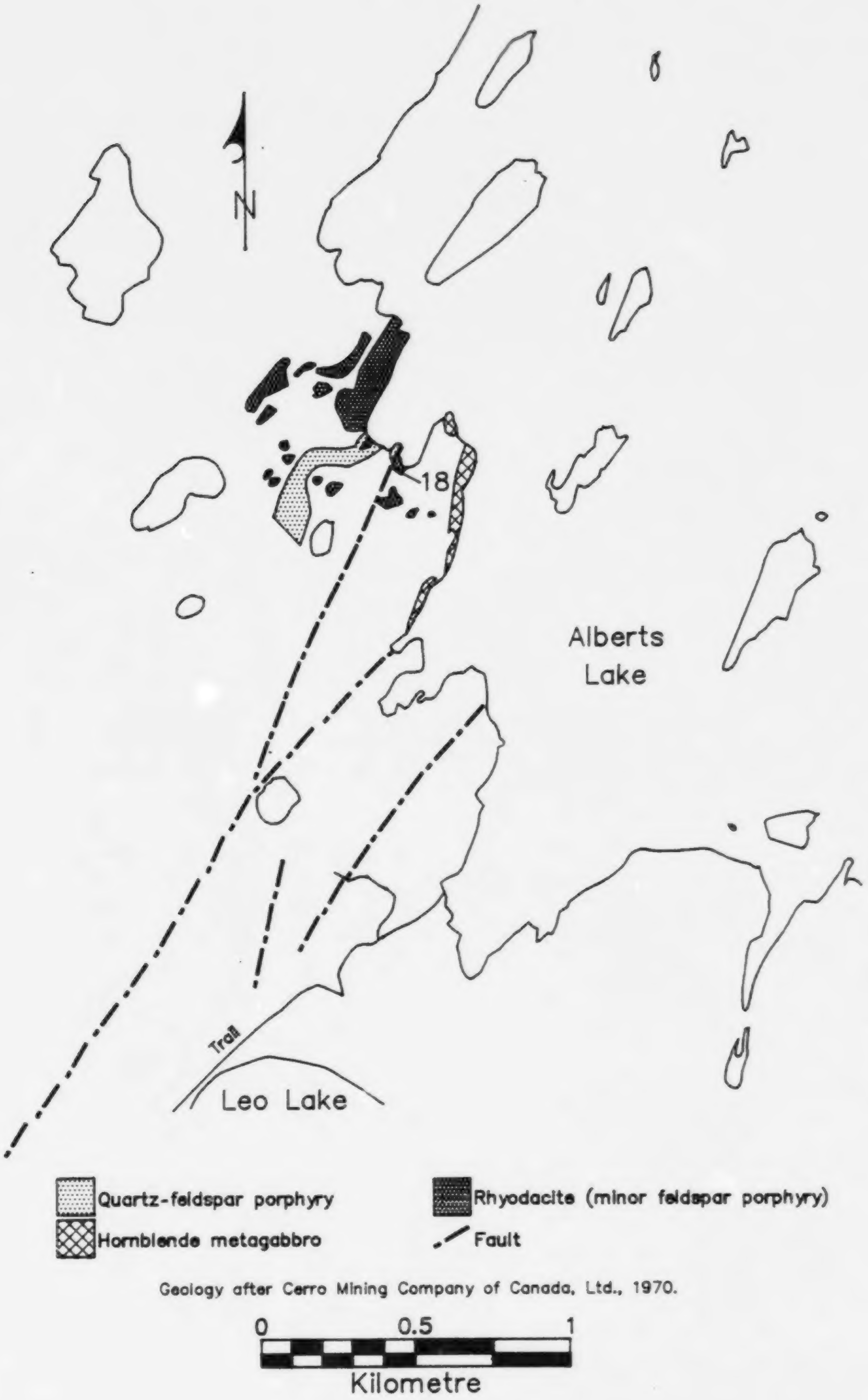
Quartz and pyrite veins adjacent to a fault zone.

REFERENCES:

Assessment File 90471
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake; one inch to one mile; Geological Survey of Canada, Ottawa.

Mineral Inventory Card 63K/13 Au7
Manitoba Energy and Mines, Minerals Division.


N
18
Alberts Lake
Trail
Leo Lake
Quartz-feldspar porphyry
Rhyodacite (minor feldspar porphyry)
Hornblende metagabbro
Fault
0
0.5
1
Kilometre

Geology after Cerro Mining Company of Canada, Ltd., 1970.

Figure 18-1: Geological setting of occurrence #18 (63K/13SE).

LOCATION: 19

NAME:

UTM: 607852N 334958E

AREA: 800 m west of Alberts Lake and 2.4 km north of Leo Lake

AIRPHOTO: A19636-197

ACCESS:

North Star Road, boat to Flintoba Lake, trail to Alberts Lake and boat on Alberts Lake or plane from Flin Flon.

EXPLORATION SUMMARY:

Occurrence noted by Bateman and Harrison (1945). As part of the Wally group claims, trenches were dug by the Thompson brothers during the 1940s (W. Hanna, pers. comm., Flin Flon, 1981).

GEOLOGICAL SETTING:

Trenches are located in a quartz-feldspar porphyry that has intruded dacitic to rhyolitic volcanic rocks and mafic tuffs(?) (Fig. 19-1).

MINERALIZATION:

Three trenches were blasted on grey quartz veins in the quartz-feldspar porphyry (Fig. 19-2). The trenches expose sheared, rusty weathered zones with fine grained quartz veins (up to 0.30 m thick), containing minor (1-5%) pyrite and traces of chalcopyrite. A small (4-5 m) dyke of greenish feldspar porphyry adjacent to the trenches contained pyrrhotite and chalcopyrite.

GEOCHEMICAL DATA:

Six samples were collected for assaying at the occurrence (see Fig. 19-2 for locations). A value of 0.5% Cu was obtained from one sample of the greenish feldspar porphyry. Results are listed on Table 19-1.

CLASSIFICATION:

Quartz-filled tension fractures in quartz-feldspar porphyry.

REFERENCES:

Assessment File: 90417
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M. ,
1945: Mikanagan Lake; one inch to one mile; Geological Survey of Canada, Ottawa.

Cerro Mining Co. of Canada Ltd.
1971: Unpublished geological maps, courtesy Pinebay Mines Ltd.

Mineral Inventory Card 63K/13 Au7
Manitoba Energy and Mines, Minerals Division.

TABLE 19-1
Geochemical Analyses at Occurrence #19

SAMPLE	ROCK DESCRIPTION	Cu ppm	Zn ppm	Ag ppm	Au ppb
42-1-ABL-3A	- grey quartz vein - trace cpy and py				100
42-1-ABL-3B	- pale brown quartz - 5% py; - veinlets of py in fractures				18
42-1-ABL-3C	- quartz vein containing cpy				3
42-1-ABL-3D	- sheared, rusty quartz-eye porphyry				1
42-1-ABL-3E	- quartz-feldspar porphry	13	33	< 1	6
42-1-ALB-3F	- greenish feldspar porphyry; - po and cpy	129	25	< 1	< 6

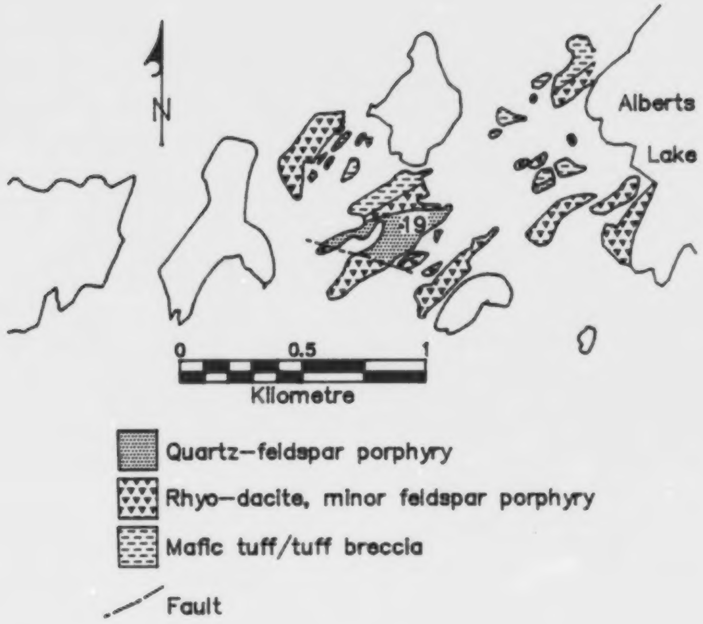

N
Alberts
Lake
19
0
0.5
1
Kilometre
Quartz-feldspar porphyry
Rhyo-dacite, minor feldspar porphyry
Mafic tuff/tuff breccia
Fault

Figure 19-1: Geological setting of occurrence #19 (63K/13SE). Geology after Cerro Mining Company of Canada, 1971.

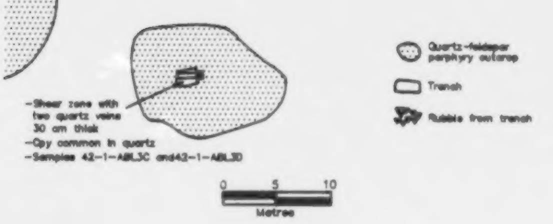

N
Samples
42-1-ABL3A
42-1-ABL3B
Quartz veins
Rubble
≤ 5% Py ± Cpy
-To green feldspar
porphyry dyke
-Samples 42-1-ABL3E
42-1-ABL3F
-Shear zone with
two quartz veins
30 cm thick
-Cpy common in quartz
-Samples 42-1-ABL3C and42-1-ABL3D
Quartz-feldspar
porphyry outcrop
Trench
Rubble from trench
0
5
10
Metres

Figure 19-2: Detailed geology, and trench locations at occurrence #19 (63K/13SE).

LOCATION: 20 NAME:

UTM: 60775742N 334124E AREA: Approximately 1.7 km west of Alberts Lake and 1.8 km north of Flintoba Lake. AIRPHOTO: A19636-197

ACCESS:

Via North Star Road, boat to Flintoba Lake and on foot.

EXPLORATION SUMMARY:

A copper occurrence shown by Bateman and Harrison (1945) is located on a small island in a swamp. Assessment file 91540 shows several trenches in the area. No obvious trenches were present upon examination in 1981; however, some excavation work has been done on several exposures. Granges Exploration drilled several holes in 1977 and 1980 on Claim CB 7485 (Fig. 20-1).

GEOLOGICAL SETTING:

Assessment file 91540 shows the area as being underlain by intermediate flows and pyroclastic rocks that are intruded by diorite (Fig. 20-1).

MINERALIZATION:

Only traces of chalcopyrite and malachite were found in the exposures examined. Diamond drill hole SH No. 3-77 by Granges Exploration denotes alternating rhyodacite and quartz-feldspar porphyry with minor (1-10%) pyrite and pyrrhotite ± chalcopyrite in both rock units (A.F. #92444).

GEOCHEMICAL DATA:

A section one foot in length, from DDH SH No. 3-77, contained 0.24% Cu and 0.31% Zn in narrow pyrite stringers with sparse sphalerite and chalcopyrite.

CLASSIFICATION:

Vein type deposit; possibly mobilizate associated with faulting along the margins of the gabbro body east of the occurrence.

REFERENCES:

Assessment Files: 92439, 92444, 91540
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

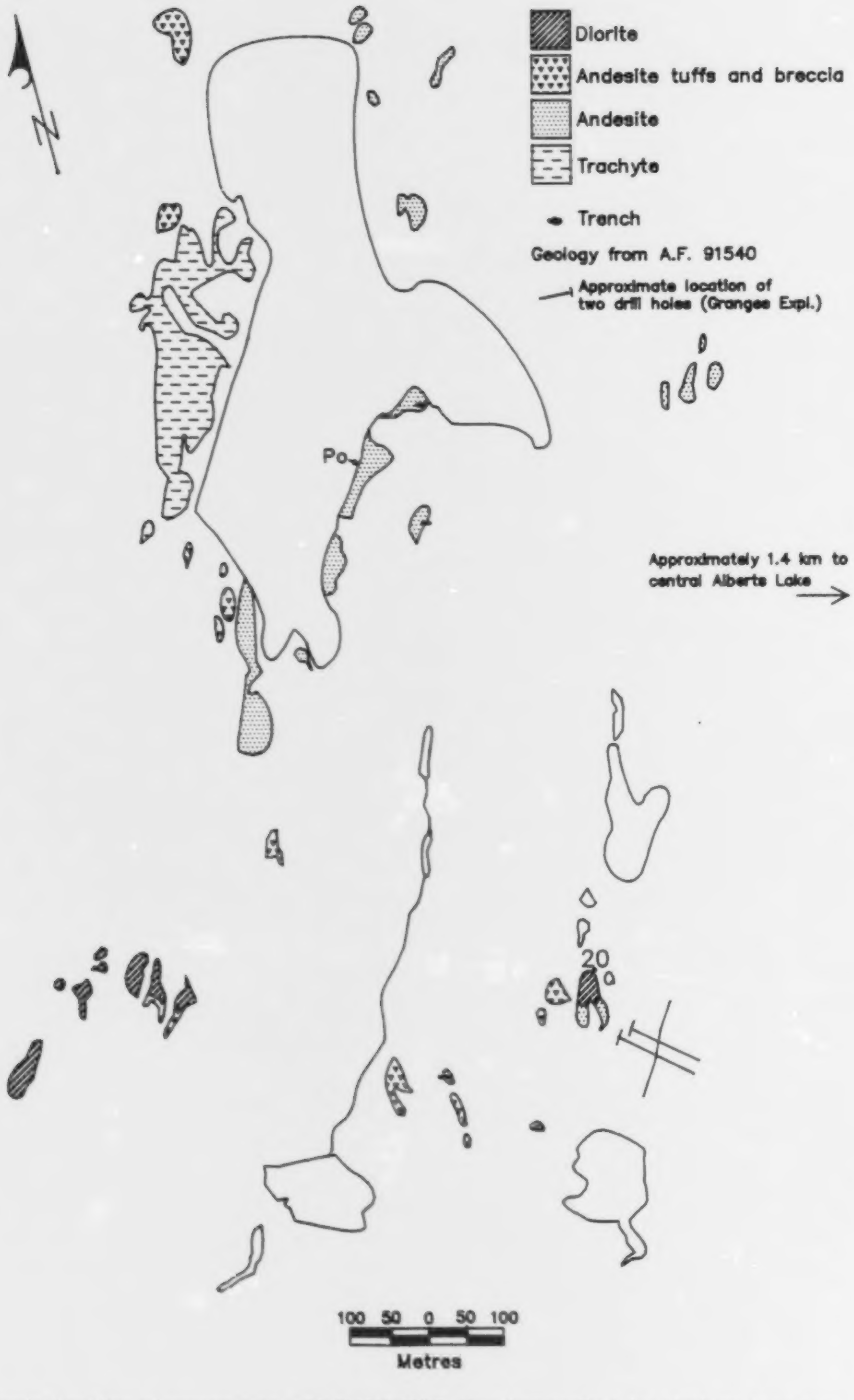

N
Diorite
Andesite tuffs and breccia
Andesite
Trachyte
Trench
Geology from A.F. 91540
Approximate location of two drill holes (Granges Expl.)
Po
Approximately 1.4 km to central Alberts Lake
20
100 50 0 50 100
Metres

Figure 20-1: Geological setting of occurrence #20 (63K/13SE). See Appendix A for airphoto location.

LOCATION: 21 NAME:

UTM: 6081413N 329669E AREA: Island in the northwest corner of Alberts Lake. AIRPHOTO: A20040-147

ACCESS:

Via boat on Alberts Lake or plane from Flin Flon.

EXPLORATION SUMMARY:

Gold occurrence indicated by Bateman and Harrison (1945).

GEOLOGICAL SETTING:

Two metre thick quartz vein in a quartz-feldspar porphyry intrusion(?) in felsic volcanic rocks.

MINERALIZATION:

White quartz.

GEOCHEMICAL DATA:

One sample (42-1-ALB-1) from rubble near the trench contained 5 ppb gold (Fig. 21-2).

CLASSIFICATION:

Quartz-filled tension fracture.

REFERENCES:

Bateman, J.D. and Harrison, J.M.

1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

Cerro Mining Co. of Canada Ltd.

1971: Unpublished geological maps; courtesy Pinebay Mines Ltd.

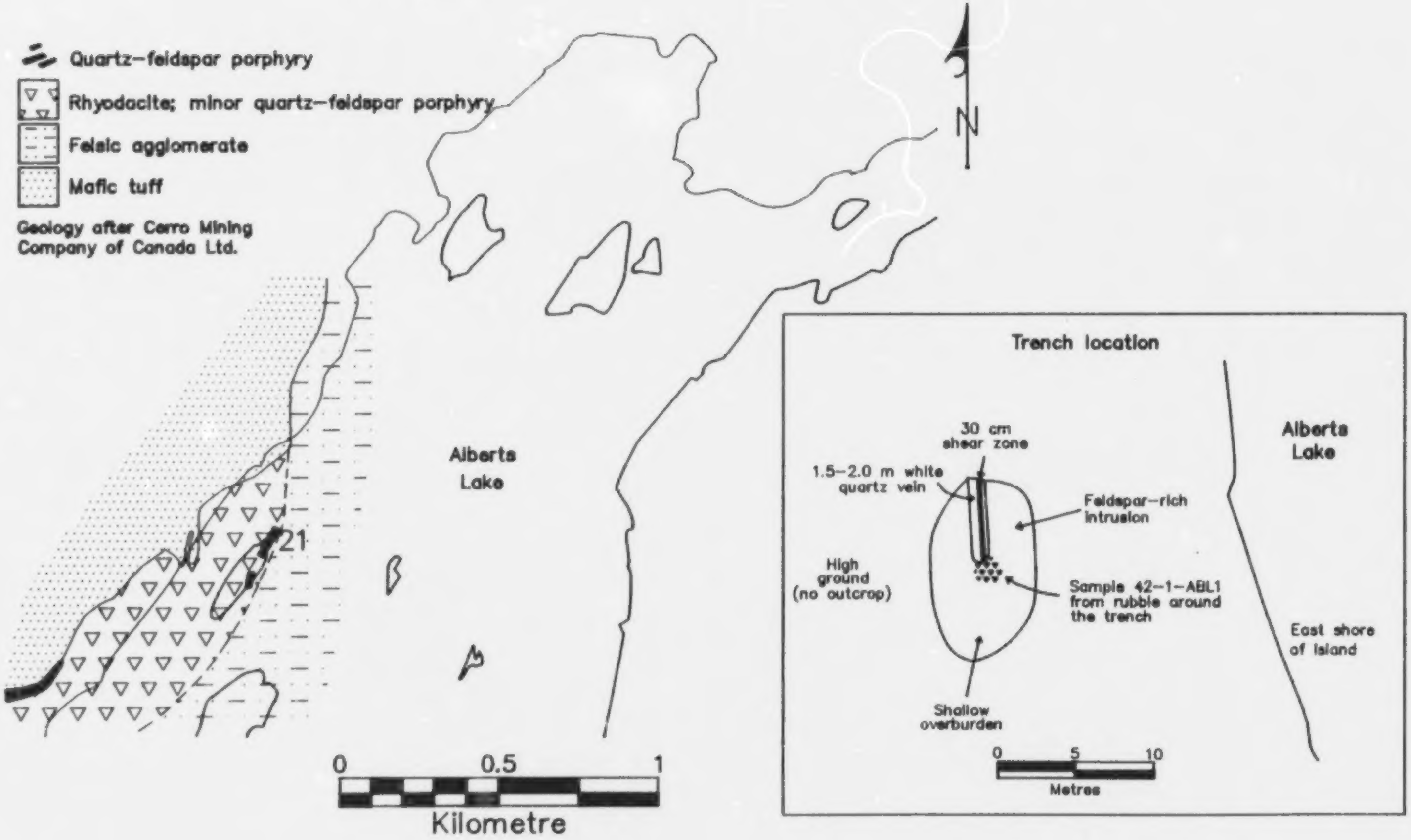

Quartz–feldspar porphyry
Rhyodacite; minor quartz–feldspar porphyry
Felsic agglomerate
Mafic tuff
Geology after Cerro Mining Company of Canada Ltd.
N
Alberta Lake
#21
0
0.5
1
Kilometre
Trench location
30 cm shear zone
1.5–2.0 m white quartz vein
Feldspar–rich intrusion
High ground (no outcrop)
Sample 42–1–ABL1 from rubble around the trench
Shallow overburden
Alberta Lake
East shore of island
0
5
10
Metres

Figure 21-1: Geological setting of occurrence #21 (63K/13SE).

LOCATION: 22

NAME:

UTM: 6070360N 338490E

AREA: Southeastern shore of Jenny Lake

AIRPHOTO: A26398-95

ACCESS:

Occurrence is approximately 150 - 200 m from the Kississing Lake Road.

EXPLORATION SUMMARY:

The Jenny Lake occurrence was first staked in 1935 by F. Woodward as the Pewobic M.C. claim. It was cancelled and restaked as the P.A.W.-1 claim by F. Woodward in 1938. Trenches were dug between 1938 and 1948 and the property was optioned by H.B.E.D. in 1949. Three holes on the P.A.W. 1 claim and two holes on the Cumsha 9 claim were drilled in 1950 (Fig. 22-1). The option was abandoned later in 1950 and P.A.W. 1 was cancelled in 1955. There were later restakings, however, no assessment files accompany these claims.

GEOLOGICAL SETTING:

A narrow band of highly siliceous sedimentary rocks and quartzite strikes northeast for a distance of approximately 670 m. The metamorphosed sedimentary rocks are intruded by mafic and felsic intrusive rocks.

MINERALIZATION:

In the surface exposures pyrite, magnetite, chalcopyrite, sphalerite and minor galena are generally confined to and most abundant in the immediate vicinity of quartz stringers. J.M. Holloway visited the area in 1939 and reported on the surface showings (Fig. 22-1).

H.B.E.D. reports well mineralized to near solid sulphide hosted by silicified quartz porphyry.

GEOCHEMICAL DATA:

The highest core assay reported was 1.5% Zn over 85 cm in DDH #1. Copper values were less than 0.1% Cu. 70 cm of 0.2% Ni was reported in DDH #3, but most nickel assays were lower (Fig. 22-2).

CLASSIFICATION:

A sulphide-silicate mobilizate from layers of probable exhalative origin.

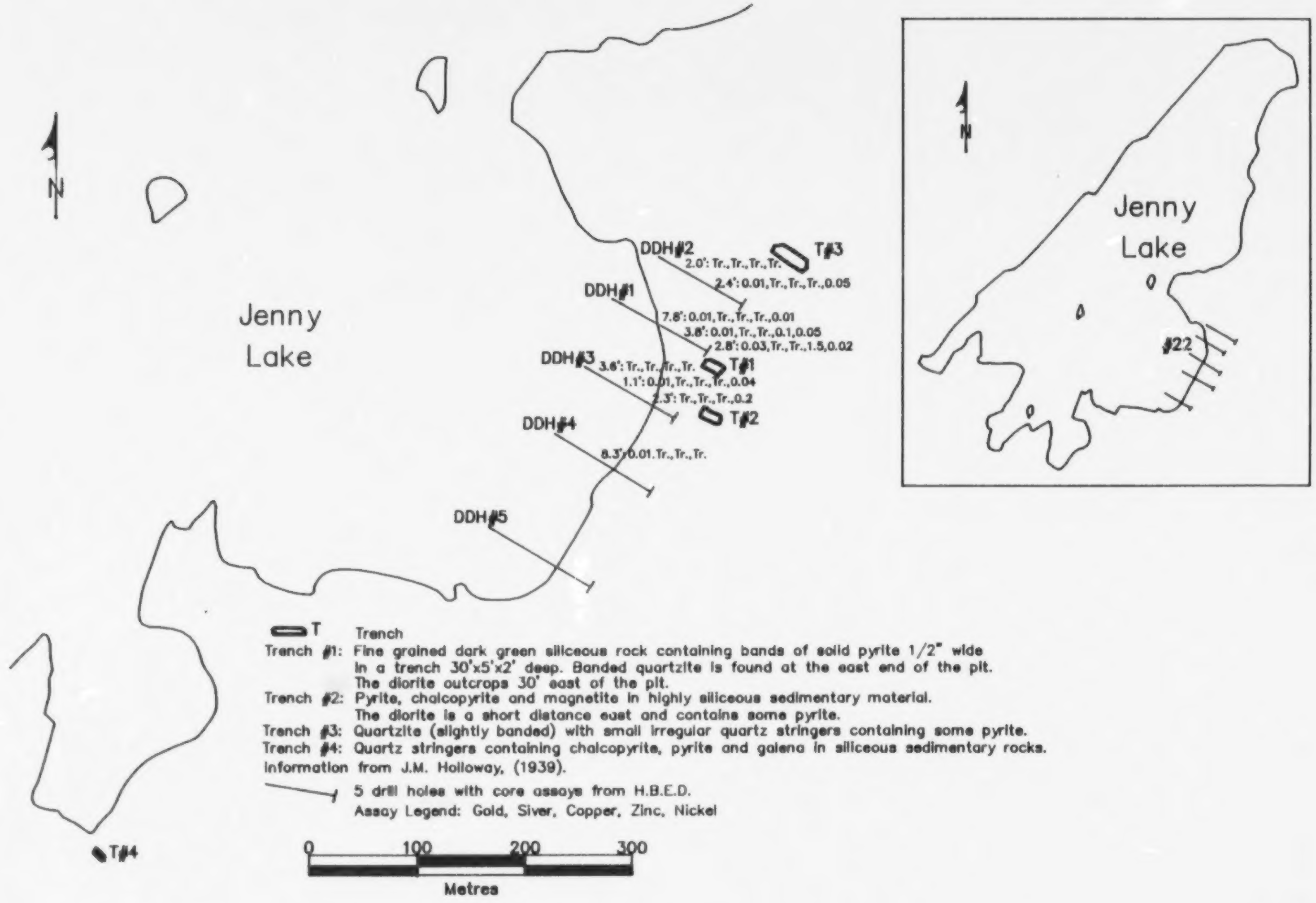
REFERENCES:

Assessment File 90443
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

Holloway, J.M.
1939: Youth Training Prospect, P.A.W., M.C.'s SE13, 63K; Unpublished Information File, Manitoba Energy and Mines, Minerals Division.

Mineral Inventory Card 63K/13 Zn3
Manitoba Energy and Mines, Minerals Division.


N
Jenny
Lake
DDH#2
2.0': Tr., Tr., Tr., Tr.
2.4': 0.01, Tr., Tr., Tr., 0.05
T#3
DDH#1
7.8': 0.01, Tr., Tr., Tr., 0.01
3.8': 0.01, Tr., Tr., 0.1, 0.05
2.8': 0.03, Tr., Tr., 1.5, 0.02
T#1
DDH#3
3.6': Tr., Tr., Tr., Tr.
1.1': 0.01, Tr., Tr., Tr., 0.04
2.3': Tr., Tr., Tr., 0.2
T#2
DDH#4
8.3': 0.01. Tr., Tr., Tr.
DDH#5
T#4
N
Jenny
Lake
#22
T
0
100
200
300
Metres

Trench

Trench #1: Fine grained dark green siliceous rock containing bands of solid pyrite 1/2" wide in a trench 30'x5'x2' deep. Banded quartzite is found at the east end of the pit. The diorite outcrops 30' east of the pit.

Trench #2: Pyrite, chalcopyrite and magnetite in highly siliceous sedimentary material. The diorite is a short distance east and contains some pyrite.

Trench #3: Quartzite (slightly banded) with small irregular quartz stringers containing some pyrite.

Trench #4: Quartz stringers containing chalcopyrite, pyrite and galena in siliceous sedimentary rocks.

Information from J.M. Holloway, (1939).

5 drill holes with core assays from H.B.E.D.

Assay Legend: Gold, Siver, Copper, Zinc, Nickel

Figure 22-1: Drill hole and trench locations at occurrence #22 (63K/13SE).

LOCATION: 23 NAME: CABIN ZONE

UTM: 6071681N 332484E AREA: East Sourdough Bay (Athapapuskow Lake) AIRPHOTO: A26328-14

ACCESS:

Via North Star Road and then by boat from Pinebay Mine, or via Baker Patton Trail (Locations #5 and #6).

HISTORY:

The history of staking of the Cabin Zone is similar to that of the Pinebay Mine and Baker Patton deposits (see files #5 and #6, 63K/13SE). Although pyrite mineralization was detected on the adjacent shoreline and trenched, the copper-zinc mineralization was not detected until drilling by H.B.E.D. of the Transcan option between 1948 and 1951. Additional drilling was carried out by Guggenhein Exploration in (1967), Pinebay Mines in 1976 and by Granges in 1986-87.

GEOLOGICAL SETTING:

The deposit, located under Pine Bay approximately 50 metres from the shoreline, is enclosed by altered rhyodacitic and rhyolitic rocks (Figure 23-1; see also Pinebay Mines and Baker Patton files #5 and #6 63K/13SE). Two drill holes (P118 and P119) intersected a basalt or andesite pillowed flow unit west of the sulphide zone.

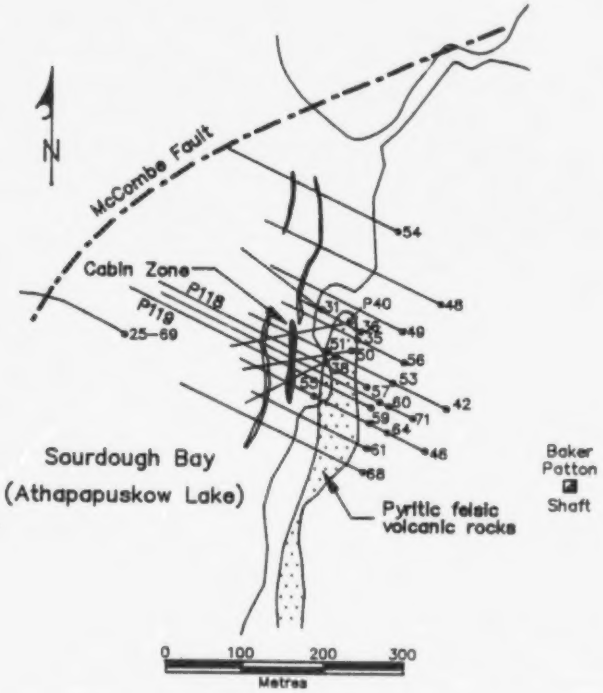


Figure 23-1: Drill hole locations at the Cabin Zone (occurrence 23 - 63K/13SE).

MINERALIZATION:

The solid sulphide body is a pyritic mass with bands of sphalerite and blebs and stringers of chalcopyrite. Pyrrhotite and magnetite are minor components. In addition to the solid sulphide lens there is a zone of alteration that consists of an extensive network of veins and blebs of pyrite in sericite-chlorite-and quartz-rich schists with occasional blebs and veinlets of sphalerite and chalcopyrite. This zone of alteration is much more extensive than the solid sulphide lens and may even be an extension of the Baker Patton alteration zone (Gale et al., 1980). However, recent detailed studies of the area have revealed that flow tops on a rhyodacitic flow unit suggest stratigraphic tops are to the east in an area 200 m east of the Cabin Zone (Tannehill and Gale, 1986). A longitudinal section of the sulphide mineralization is shown in Figure 23-2; it should be noted that drill logs of the T-series of drill holes were not available to the authors.

GEOCHEMISTRY:

This deposit is estimated to contain 72 000 tonnes of 6.9% Zn and 1% Cu (A.L. Parres, pers. comm. Flin Flon, 1987). It is noteworthy that this is the largest known concentration of zinc mineralization in the Baker Patton felsic complex (cf. Fig. 3-1). Consequently, the presence of both zinc mineralization at depth in hole T64 and extensive areas of intensely altered and pyritic rocks beyond the known solid sulphide lens suggest that the potential for more zinc-copper mineralization below the 180 m level is very high.

CLASSIFICATION:

Stratabound volcanogenic massive sulphide deposit with a solid sulphide lens and an extensive zone of altered felsic volcanic rocks.

REFERENCES:

Bailes, A.H. and Lamb, C.
1977: Geological map of the Pine Bay area; Geological Services Branch, unpublished.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch equals one mile; Geological Survey of Canada, Ottawa.

Mineral Inventory Card 63K/13 Cu1
Manitoba Energy and Mines, Minerals Division.

Pinebay Mines Ltd.
Drill hole compilation, unpublished.

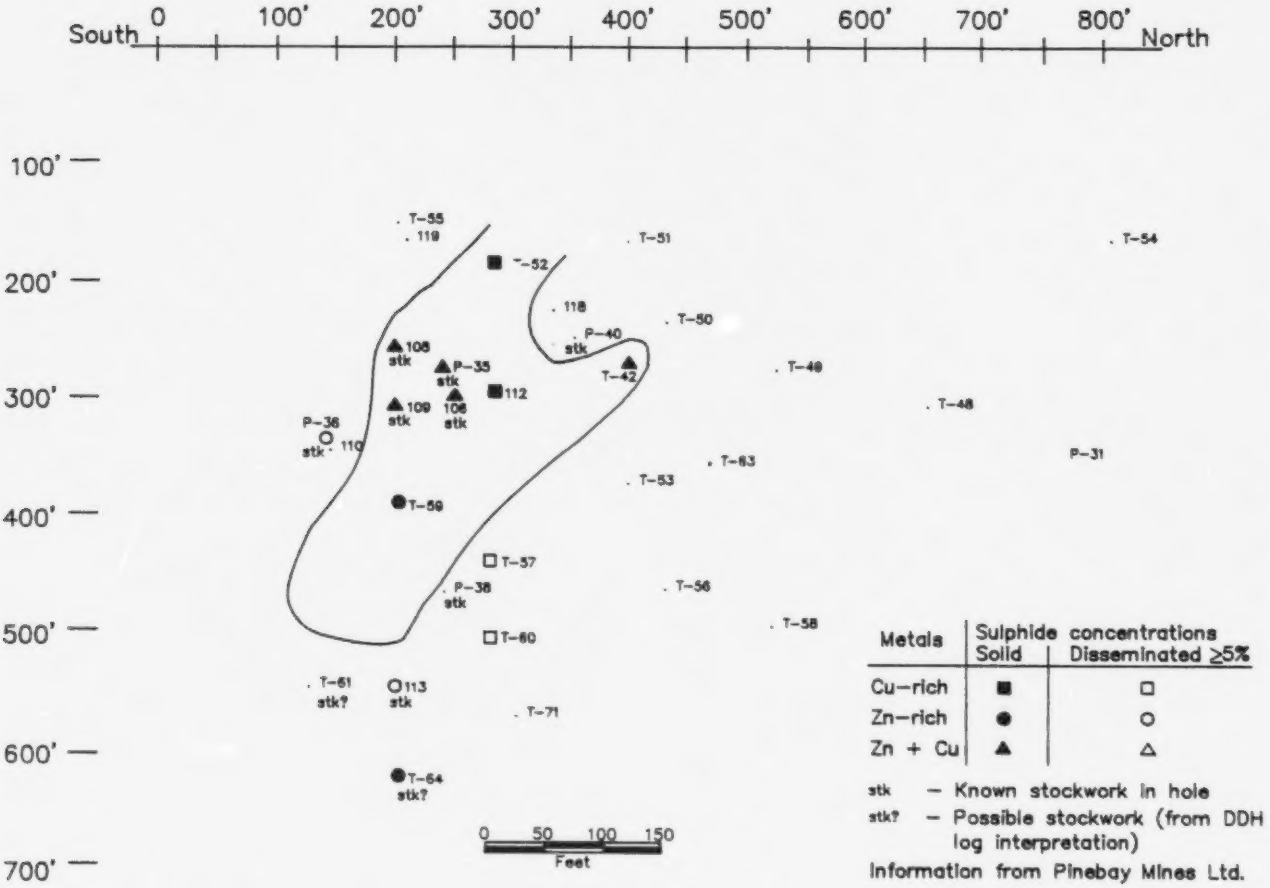

South
0
100'
200'
300'
400'
500'
600'
700'
800'
North
100'
200'
300'
400'
500'
600'
700'
T-55
119
T-51
T-54
-52
118
T-50
P-40
stk
108
stk
P-35
stk
T-42
T-49
112
109
stk
106
stk
T-48
P-36
stk
110
T-63
P-31
T-53
T-59
T-57
P-38
stk
T-56
T-58
T-60
T-61
stk?
113
stk
T-71
T-64
stk?
0
50
100
150
Feet
Metals
Sulphide concentrations
Solid
Disseminated ≥5%
Cu-rich
Zn-rich
Zn + Cu
stk – Known stockwork in hole
stk? – Possible stockwork (from DDH log interpretation)
Information from Pinebay Mines Ltd.

Figure 23-2: Longitudinal section of the sulphide mineralization at the Cabin Zone.

LOCATION: 24 NAME:

UTM: 607804N/335463E AREA: Bryan Lake, 2 km east of North Star Mine AIRPHOTO: A20040-141

ACCESS:

Via North Star Road, boat and on foot, or by plane from Flin Flon.

EXPLORATION SUMMARY:

Exploration work prior to 1951 produced at least three small trenches near the northwest shore of Bryan Lake. Eight holes were drilled by H.B.E.D. in 1951 (Assessment File 90410). One drill hole was put down by Cerro Exploration in 1965 (A.F. 90423; Figure 24-1). Prospecting and a Turam survey were conducted on behalf of H.B.E.D. in 1973-4 (A.F. 92079).

GEOLOGICAL SETTING:

The area, mapped by Bateman and Harrison (1945) occurs within a large area of felsic volcanic rocks referred to as the Baker Patton felsic centre (cf. Fig. 3-1). The area has not been mapped in detail.

MINERALIZATION:

Drill cores from the trenched area contained minor to disseminated amounts of pyrite, minor amounts of chalcopyrite and sericitic schists. In addition several holes intersected narrow stringers and veins of quartz and pyrite. It is not known if any of these cores were analyzed for gold.

CLASSIFICATION:

This is probably part of a synvolcanic hydrothermal alteration zone since there are abundant sericitic and chloritic schists with disseminated to minor pyrite over a large area. The quartz stringers and quartz-pyrite veins probably represent the filling of late fractures by mobilizate.

REFERENCES:

Assessment Files 90410, 90423, 92079
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, 1 inch equals 1 mile; Geological Survey of Canada, Ottawa.

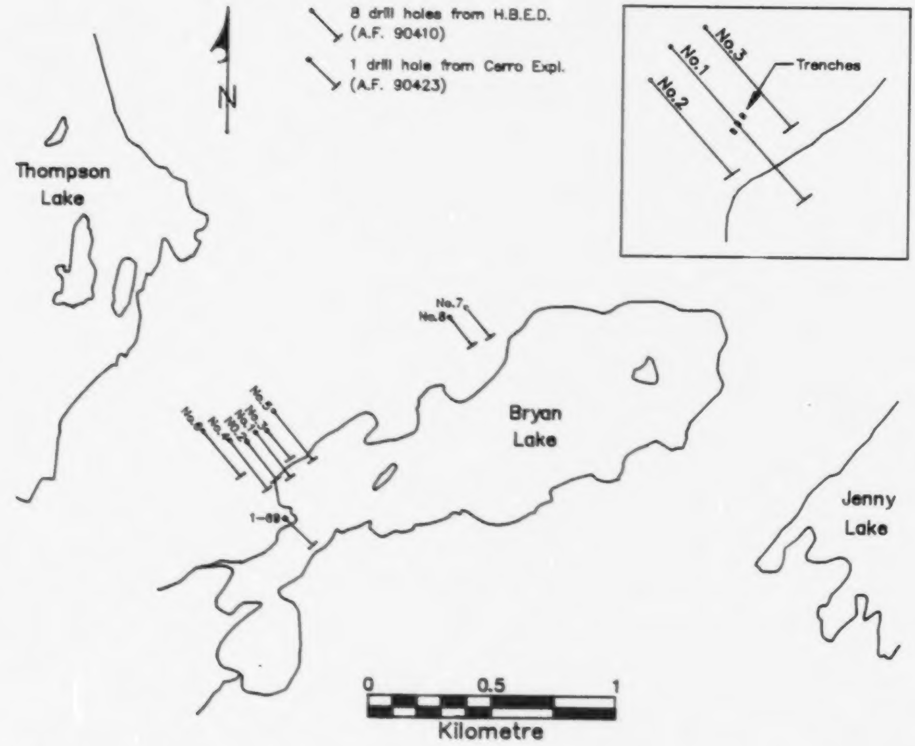


Figure 24-1: Drill hole and trench locations at occurrence #24 (63K/13SE).

LOCATION: 25

NAME:

UTM: 6072128N 330030E

AREA: East side of the Pineroot River, between Whitefish Lake and Mikanagan Lake.

AIRPHOTOS: A26328-201 and -173

ACCESS:

Via walking approximately 1.2 km west along the power line from the North Star Road.

EXPLORATION SUMMARY:

A geophysical survey was completed on the Bear claims by H.B.E.D. in 1952. Two parallel conductors with strike lengths of 1800 m and 914 m were located. H.B.E.D. tested the anomalies with four diamond drill holes totalling 962 m in 1953. Seven other drill holes are shown in the vicinity; however, no logs are available. Pineroot Mineral Enterprises drilled a 207 m drill hole in 1968 (Fig. 25-1.).

GEOLOGICAL SETTING:

The E.M. conducting rocks underlie a unit of pyroxene-phyric intermediate flows. The North Star Road volcanic conglomerates and mafic lapilli tuff/tuff breccias are exposed to the east and south of the occurrence. Mafic volcaniclastic rocks occur to the west (Fig. 25-1). Subsurface information from drill logs indicates the conducting anomalies are in a series of alternating layers of dacite, andesite and graphitic schists.

MINERALIZATION:

Four holes drilled by H.B.E.D. show two separate layers of mineralization indicating both conductors were located in the subsurface. The host rock is noted as a graphite schist and may include carbonate stringers, quartz, sericite and chlorite. Well mineralized (near solid to solid) sections of pyrite and pyrrhotite with traces of chalcopyrite were found by all four holes. Four metres of solid fine grained pyrite with thin pyrrhotite veins were found in DDH #3. In the Pineroot Mineral Enterprises drill hole the host rock is noted as a dark, fine grained chlorite (possibly magnesium-rich) and a section from 82.6 to 85.9 m contained 40% pyrite and pyrrhotite. Although most abundant in the graphite schist or chlorite, sulphide mineralization is also present (less than 10%) in the interlayered dacite and andesite.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Solid bands of fine grained pyrite in graphite schist suggest the shorter westernmost anomaly is part of a sulphide facies iron formation.

There appears to be less graphite in the deeper parts of holes 2 and 3 to correlate with the easternmost anomaly. A 1.5 m section of quartz-feldspar porphyry is recorded as graphitic in Hole 2. If a black chlorite was mistaken for graphite then the easternmost anomaly warrants further investigation; the Pineroot Enterprise drill log notes graphite near the start of the hole but black chlorite at approximately the stratigraphic level of the easternmost anomaly.

REFERENCES:

Assessment Files: 90406. 90441, 90407. 90445
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake Area; Manitoba Energy and Mines, Geological Services Branch, Geological Map GR 87-1-1.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A. one inch to one mile; Geological Survey of Canada, Ottawa.

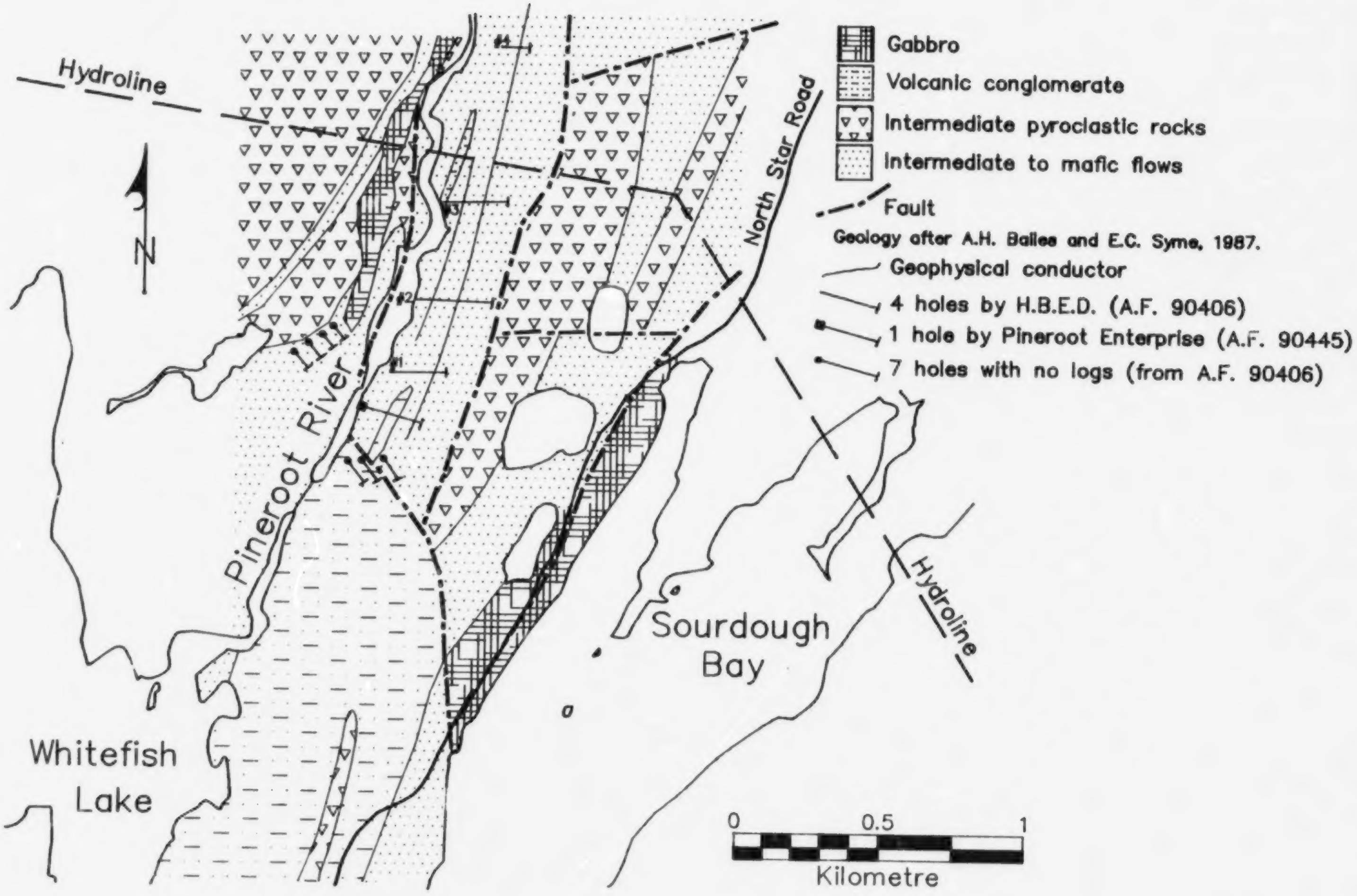

Hydroline
N
Pineroot River
North Star Road
Whitefish Lake
Sourdough Bay
Hydroline
Gabbro
Volcanic conglomerate
Intermediate pyroclastic rocks
Intermediate to mafic flows
Fault
Geology after A.H. Bailes and E.C. Syme, 1987.
Geophysical conductor
4 holes by H.B.E.D. (A.F. 90406)
1 hole by Pineroot Enterprise (A.F. 90445)
7 holes with no logs (from A.F. 90406)
#1
#2
#3
#4
0
0.5
1
Kilometre

Figure 25-1: Geological setting of occurrence #25 (63K/13SE).

LOCATION: 26 NAME: X.L.

UTM: 6076510N 329263E

AREA: Northern shore of a bay, west side of Mikanagan Lake.

AIRPHOTO: A26328-205

ACCESS:

Via Kississing Lake Road, Lac Aimee Road and boat to Mikanagan Lake, or by plane from Flin Flon.

EXPLORATION SUMMARY:

G.M. Monson staked X.L.2 in 1939, and completed surface work on the property between 1940 and 1944. Further work was reported between 1950 and 1952 by J. Murray on the Ella 1 claim. These claims were optioned to H.B.E.D. in 1953; however, an E.M. survey did not reveal any conductors and the property was dropped in 1958. Restaked as the Midas 1 claim in 1960 and four diamond drill holes, totalling 169 m were drilled between 1961 and 1963 by the Juma Mining and Exploration Ltd.

GEOLOGICAL SETTING:

The gold occurrence is located in quartz diorite that forms the border of a large mafic intrusive mass between Tartan Lake and Mikanagan Lake. The intrusive rocks are interfingered with greenstone (Fig. 26-1) and the diorite is intruded by dykes of feldspar porphyry.

MINERALIZATION:

The gold occurs in a short mineralized lens of en echelon quartz stringers (up to 30 cm thick) that crosses a tongue of metadiorite for an exposed length of 27 m and has a maximum width of 6 m (Bateman, 1945, p.6). The quartz contains minor (1-10%) pyrite, and the adjacent diorite is impregnated with needles of arsenopyrite and sparse cubic pyrite.

Juma Mining and Exploration Ltd. reported that the arsenopyrite crystals appear to be restricted to a sequence of cross-fractures in a late feldspar porphyry dyke within the metadiorite (Assessment File 91582).

GEOCHEMICAL DATA:

Channel samples averaged 6 g/tonne Au over widths of up to 4.5 m (Bateman, 1945, p. 6). Two of Juma's four drill holes intersected mineralized sections: Hole ML-7 returned 85 cm of 3 g/tonne Au and 94 cm of 4 g/tonne Au; Hole ML-9 drilled under ML-7 intersected 5 g/tonne Au over a 1.2 m core length.

CLASSIFICATION:

Multiple veins in dioritic and quartz-feldspar intrusions.

REFERENCES:

Bailes, A.H. and Syme, E.C.
1987: Geology of Flin Flon-White Lake Area; Manitoba Energy and Mines, Geological Services Branch, Geological Map GR87-1-1.

Bateman, J.D.
1945: Gold deposits east of Flin Flon; Geological Survey of Canada, Paper 45-12, and the Precambrian, June 1945, p. 8.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

Mineral Inventory Card 63K/13 Au3
Manitoba Energy and Mines, Minerals Division.

Assessment File: 90448, 91582
Manitoba Energy and Mines, Minerals Division.

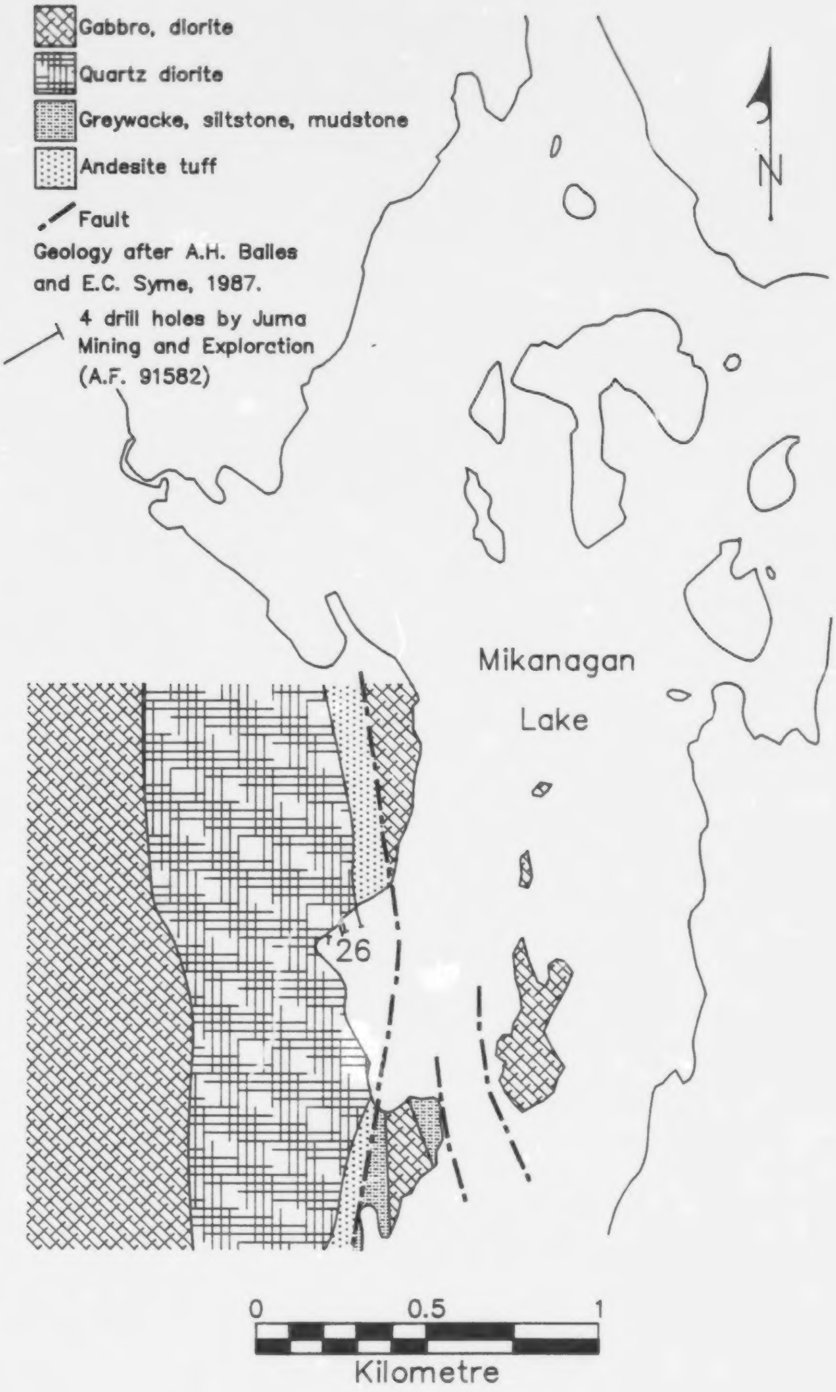

Gabbro, diorite
Quartz diorite
Greywacke, siltstone, mudstone
Andesite tuff
Fault
Geology after A.H. Bailes and E.C. Syme, 1987.
4 drill holes by Juma Mining and Exploration (A.F. 91582)
N
Mikanagan Lake
26
0
0.5
1
Kilometre

Figure 26-1: Geological setting of occurrence #26 (63K/13SE).

LOCATION: 27 NAME: HOT SHOT

UTM: 6076510N 329263E AREA: Northwest corner of Mikanagan Lake. AIRPHOTO: A20040-99

ACCESS:

Via Kississing Lake Road, Lac Aimee Road and boat to Mikanagan Lake.

EXPLORATION SUMMARY:

W. Wallstrom staked Hotshot 5 in 1937, and cut several trenches over the next four years. The claims were cancelled in 1947. H.B.E.D. optioned W.J. Murray's Stinky 7 claim in 1952 and carried out an E.M. survey, that did not yield any conductive zones. The option was cancelled in 1954 and the claims have been assigned to several companies; no other non-confidential assessment work files are available.

GEOLOGICAL SETTING:

Nine trenches were put down on quartz and carbonate veins in a shear zone that occurs along the contact between greenstone and a small body of albite granite (Fig. 27-1).

MINERALIZATION:

The main quartz vein is 25 - 100 cm thick and can be traced for approximately 41 m. Strong shearing in the adjacent greenstone has altered it to a carbonatized sericite-chlorite schist zone that is 1 - 4 m thick. Pyrite and chalcopyrite are present along fractures in the quartz. Pyrite and arsenopyrite are associated with the carbonatized sericite-chlorite schist.

GEOCHEMICAL DATA:

Four chip samples on the property averaged 2 g/tonne Au over 30 cm (Bateman, 1944).

CLASSIFICATION:

Vein deposit in altered and sheared greenstone.

REFERENCES:

Bateman, J.D.
1945: Gold Deposits East of Flin Flon, Geological Survey of Canada, Paper 45-12.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

Mineral Inventory Card 63K/13 Au11
Manitoba Energy and Mines, Minerals Division.

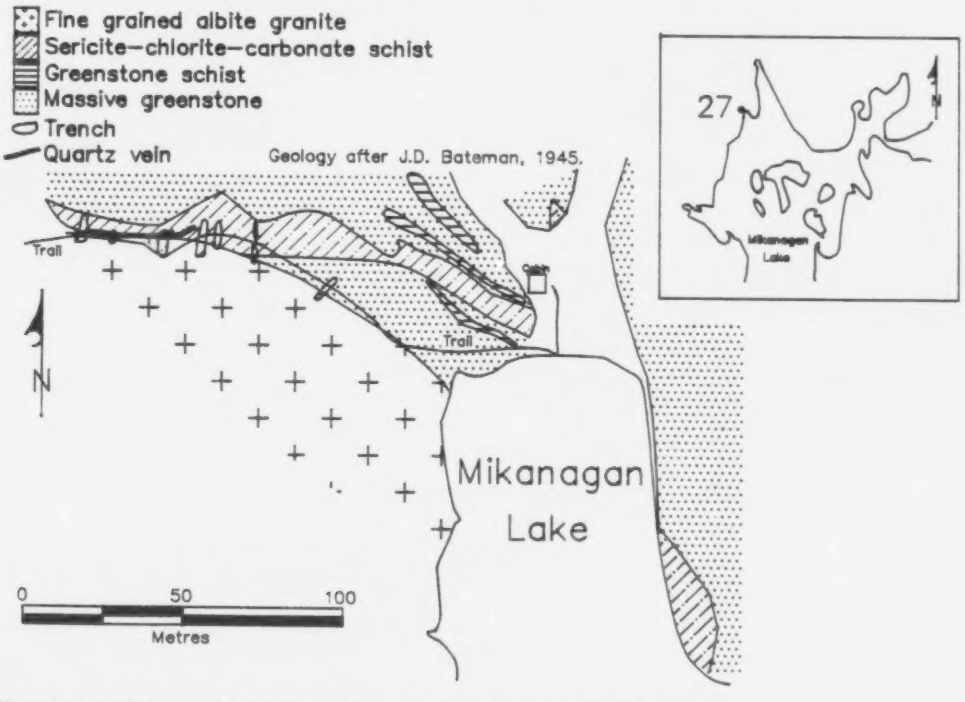

Fine grained albite granite
Sericite—chlorite—carbonate schist
Greenstone schist
Massive greenstone
Trench
Quartz vein
Geology after J.D. Bateman, 1945.
Trail
Trail
Cabin
N
Mikanagan Lake
0
50
100
Metres
27
N
Mikanagan Lake

Figure 27-1: Detailed geology, and trench locations at occurrence #27 (63K/13SE).

LOCATION: 28

NAME:

UTM: 6079783N 328674E

AREA: One km due west of the northernmost tip of Mikanagan Lake.

AIRPHOTO: A20040-99

ACCESS:

Via Kississing Lake Road, Lac Aimee Road, boat to Mikanagan Lake and 1.2 km along trail leading from occurrence #27 (northwest bay of Mikanagan Lake).

EXPLORATION SUMMARY:

The property was first staked by A. Bartley in 1926 as Yukon 2. Bailor Mines Ltd. sank two or three pits/shafts in 1928 and drilled a 39 m hole in 1929. John Murray staked Stinky 1 in 1950. San Antonio Mines Ltd. completed five holes totalling 410 m in 1955. In 1957 Prospectors Airway Ltd. put down 4 x-ray diamond drill holes totalling 98 m but did not record this work. In 1959 Nu-Gold Mines Ltd. developed a shaft measuring 10 x 3 m on the surface and 14 m in depth. A small mill was installed but mining and production figures are unknown. Stinky 1 was cancelled in 1963. Restaked as the Rich claims in 1963 by J. Murray, several trenches and six diamond drill holes totalling 270 m were completed by Juma Mining and Exploration Ltd. Presently staked as the Rank claim.

GEOLOGICAL SETTING:

Gold occurs in a shear zone within a medium grained mafic intrusive or 'diabase' host rock. The shear zone consists of a quartz-carbonate vein in chlorite-sericite schists, intercalated with intrusions of feldspar porphyry, that are only partly sheared (Fig. 28-1).

MINERALIZATION:

The vein consists of milky quartz, rusty weathered carbonate, traces of muscovite, tourmaline and minor sulphides (mainly pyrite but also locally arsenopyrite and chalcopyrite). Visible gold is found sporadically throughout the vein system, but largely restricted to the "fold nose" area of the vein structure. The shear zone is 10-25 m wide and contains disseminated arsenopyrite needles.

GEOCHEMICAL DATA:

San Antonio Gold Mines Ltd. drill hole #1 intersected 1.7 m averaging 11 g/tonne Au. Prospectors Airways recorded an intersection of 1.8 m averaging 9 g/tonne Au. Holes ML-3 and ML-4 drilled by Juma Mining and Exploration Ltd., returned 4.5 g/tonne Au over 1.3 m and 8 g/tonne Au over 0.9 m, respectively (Fig. 28-1).

CLASSIFICATION:

Vein type deposit in altered and sheared mafic(?) intrusive rock.

REFERENCES:

Assessment Files 90457, 91582
Manitoba Energy and Mines, Minerals Division

Bailor Gold Syndicate Limited and The Bailor Gold Mines Ltd., SE 13, 63K
Corporation Files, Manitoba Energy and Mines, Minerals Division.

Bateman, J.D.
1945: Gold Deposits East of Flin Flon; Geological Survey of Canada, Paper 45-12.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

Esposito, B.
1973: Gold Occurrences, Northwest of Mikanagan Lake; SE 13, 63K; Unpublished Information File, Manitoba Energy and Mines, Minerals Division.

Mineral Inventory Card 63K/13 Au1
Manitoba Energy and Mines, Minerals Division.

Nu-Gold Mines Limited, SE 13, 63K
Mining Engineering File, Manitoba Energy and Mines, Minerals Division.

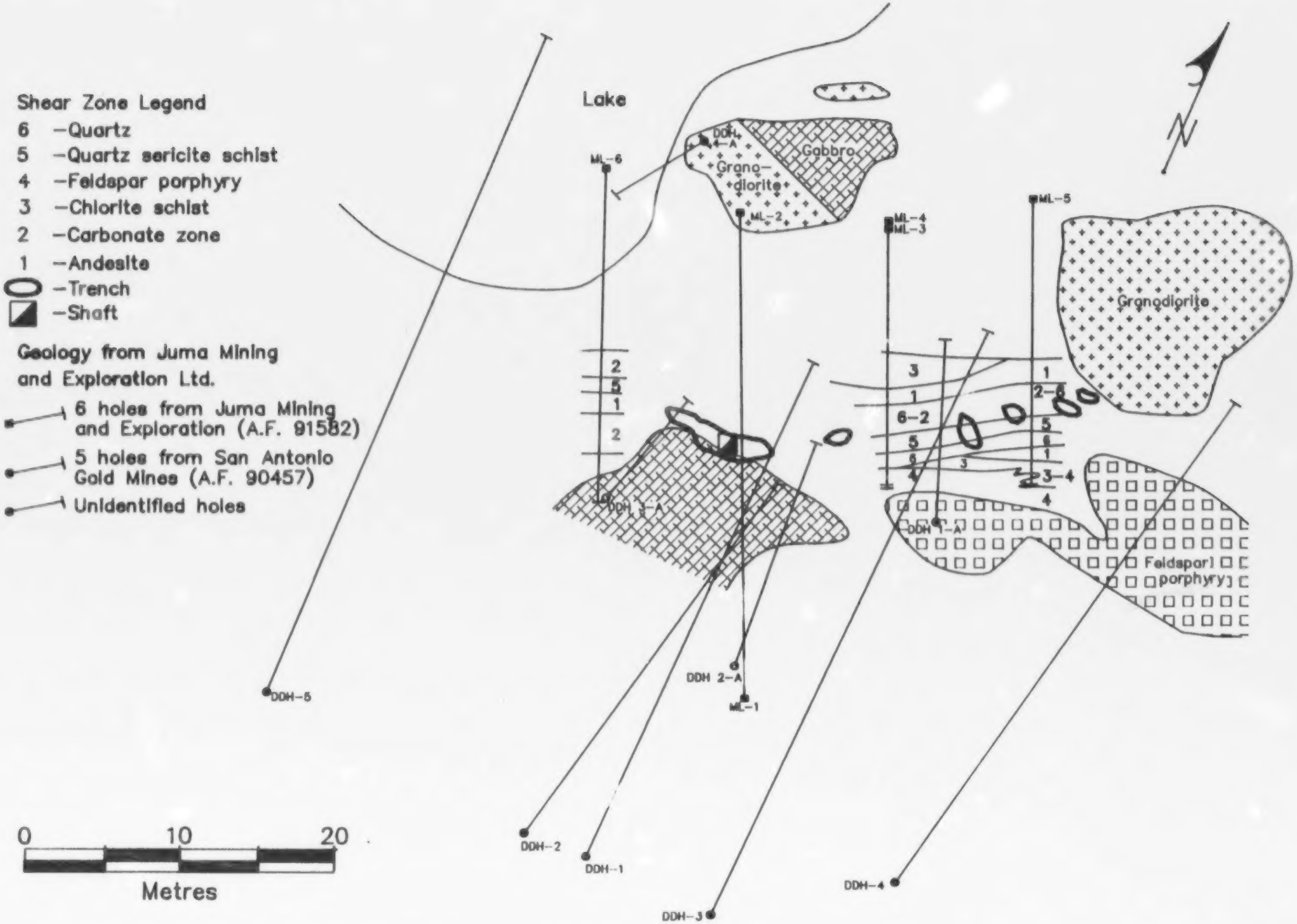

Shear Zone Legend
6 —Quartz
5 —Quartz sericite schist
4 —Feldspar porphyry
3 —Chlorite schist
2 —Carbonate zone
1 —Andesite
—Trench
—Shaft
Geology from Juma Mining and Exploration Ltd.
6 holes from Juma Mining and Exploration (A.F. 91582)
5 holes from San Antonio Gold Mines (A.F. 90457)
Unidentified holes
0
10
20
Metres
Lake
N
Gabbro
Grano-diorite
Granodiorite
Feldspar porphyry
ML-1
ML-2
ML-3
ML-4
ML-5
ML-6
DDH-1
DDH-2
DDH-3
DDH-4
DDH-5
DDH 1-A
DDH 2-A
DDH 3-A
DDH 4-A
1
2
3
4
5
6
2-6
6-2
3-4

Figure 28-1: Detailed geology, trench and drill hole locations at occurrence #28 (63K/13SE).

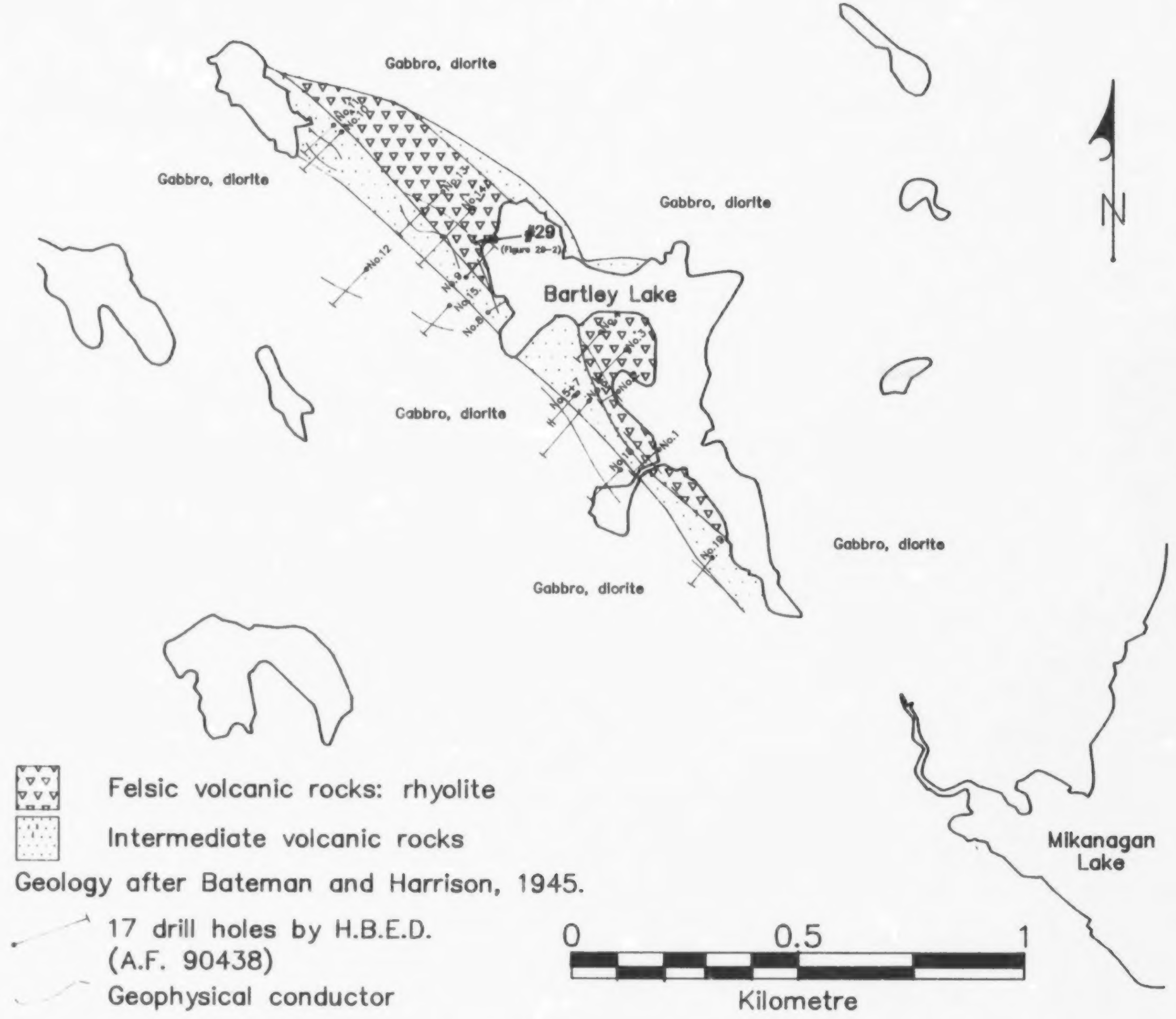

Gabbro, diorite
Gabbro, diorite
Gabbro, diorite
#29
(Figure 29-2)
Bartley Lake
No.11
No.10
No.13
No.14
No.12
No.9
No.15
No.8
No.2
No.3
No.5+7
No.4
No.6
No.1
No.16
No.19
Gabbro, diorite
Gabbro, diorite
Gabbro, diorite
Mikanagan Lake
N
Felsic volcanic rocks: rhyolite
Intermediate volcanic rocks
Geology after Bateman and Harrison, 1945.
17 drill holes by H.B.E.D. (A.F. 90438)
Geophysical conductor
0
0.5
1
Kilometre

Figure 29-1: Geological setting of occurrence #29 (63K/13SE).

LOCATION: 29 NAME:

UTM: 6079340N 327362E AREA: Northwest Bartley Lake AIRPHOTO: A26397-116

ACCESS:

Via Tartan Lake Mine Road, boat on Tartan Lake and trail to Bartley Lake.

EXPLORATION SUMMARY:

The property was initially staked in 1926 as part of the 10 claim Yukon group by A. Bartley. In 1952 the Bartley claims were optioned by H.B.E.D. and 19 diamond drill holes were put down on several E.M. anomalies (Fig. 29-1). The claims were cancelled in 1956 and there are no non-confidential assessment files to accompany any post-1956 work.

GEOLOGICAL SETTING:

The sulphide occurrence is in massive to schistose andesite that is surrounded by gabbroic intrusive rocks.

MINERALIZATION:

The mineralization in the trenches is in the form of scattered rusty weathered lenses/layers that contain trace to minor (1-10%) pyrite and pyrrhotite. A silicic layer is associated with the pyrite zone in the sheared andesite. In the subsurface, all of the H.B.E.D. drill holes intersected zones of disseminated pyrite and pyrrhotite. Holes 5, 6, 10, 13, 23 and 14 contained intersections (0.3-2.13 m) of solid pyrrhotite and pyrite along with traces of chalcopyrite.

GEOCHEMICAL DATA:

Two samples of sulphide material taken from trenches at the occurrence yielded only trace amounts of Cu and Zn. The results and sample locations are shown on Figure 29-2.

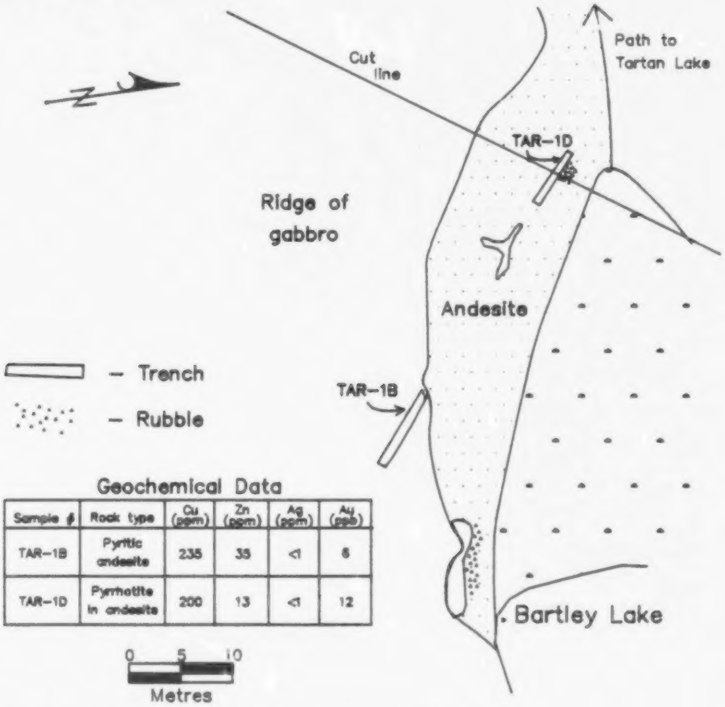
CLASSIFICATION:

Not certain. Zone of mobilized sulphide in sheared andesite or a sulphide-bearing stratum of exhalative origin(?).

REFERENCES:

Assessment File 90438
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.



Geochemical Data

Sample #	Rock type	Cu (ppm)	Zn (ppm)	Ag (ppm)	Au (ppb)
TAR-1B	Pyritic andesite	235	35	<1	5
TAR-1D	Pyrrhotite in andesite	200	13	<1	12

Figure 29-2: Trench and sample locations at occurrence #29 (63K/13SE).

LOCATION: 30 NAME:

UTM: 6079937N 326793E AREA: Located on the northern tip of a small lake 0.8 km northwest of Bartley Lake AIRPHOTO: A26397-116

ACCESS:

Via Tartan Lake Mine Road, boat on Tartan Lake, trail to lake.

EXPLORATION SUMMARY:

Initially staked as part of the Yukon claims in 1929. In 1952 the Bartley claims were optioned by H.B.E.D. and two holes were drilled northwest of the lake. Two parallel trenches about 10 x 2 x 2 m were excavated near the shoreline.

GEOLOGICAL SETTING:

The trenches occur in metavolcanic rock (andesite) and along the south margin of a medium- to coarse-grained hornblende diorite/gabbro (Fig. 30-1).

MINERALIZATION:

The two trenches cut finely banded quartz and pyrite, interbedded with fine- to medium-grained siliceous or silicified rock (J. Stewart, 1977). In Pit 2 there is a 2 m thick zone with several quartz-rich layers 10-15 cm thick. The thickest sulphide layer is a 20 cm band of solid to near solid pyrite. The greenstone in Pit 1 contains 10-15% pyrite (Fig. 30-2). Leaching of the rock by acidic surface solutions has produced a white quartz-sericite rock and a narrow (10 cm) zone of black (graphitic?) material. Pyritic silicic (?) layers in Pit 1 may be the continuation of layers in Pit 2.

GEOCHEMICAL DATA:

Three samples analyzed for Cu, Zn, Ag and Au yielded less than 0.5% Cu. Sample locations and results are given on Figure 30-2.

CLASSIFICATION:

Not certain. Sulphide stratum(?) or sulphide veins related to the gabbroic intrusion.

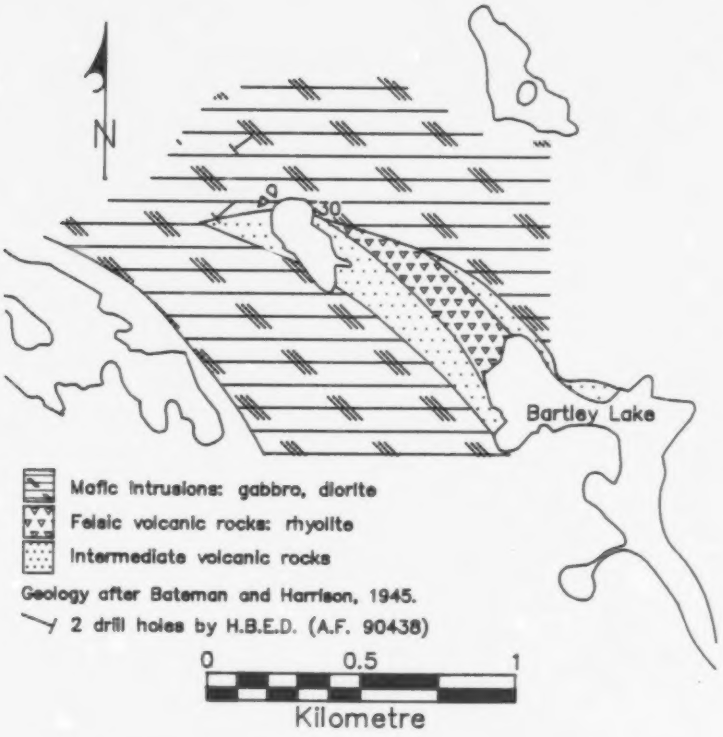
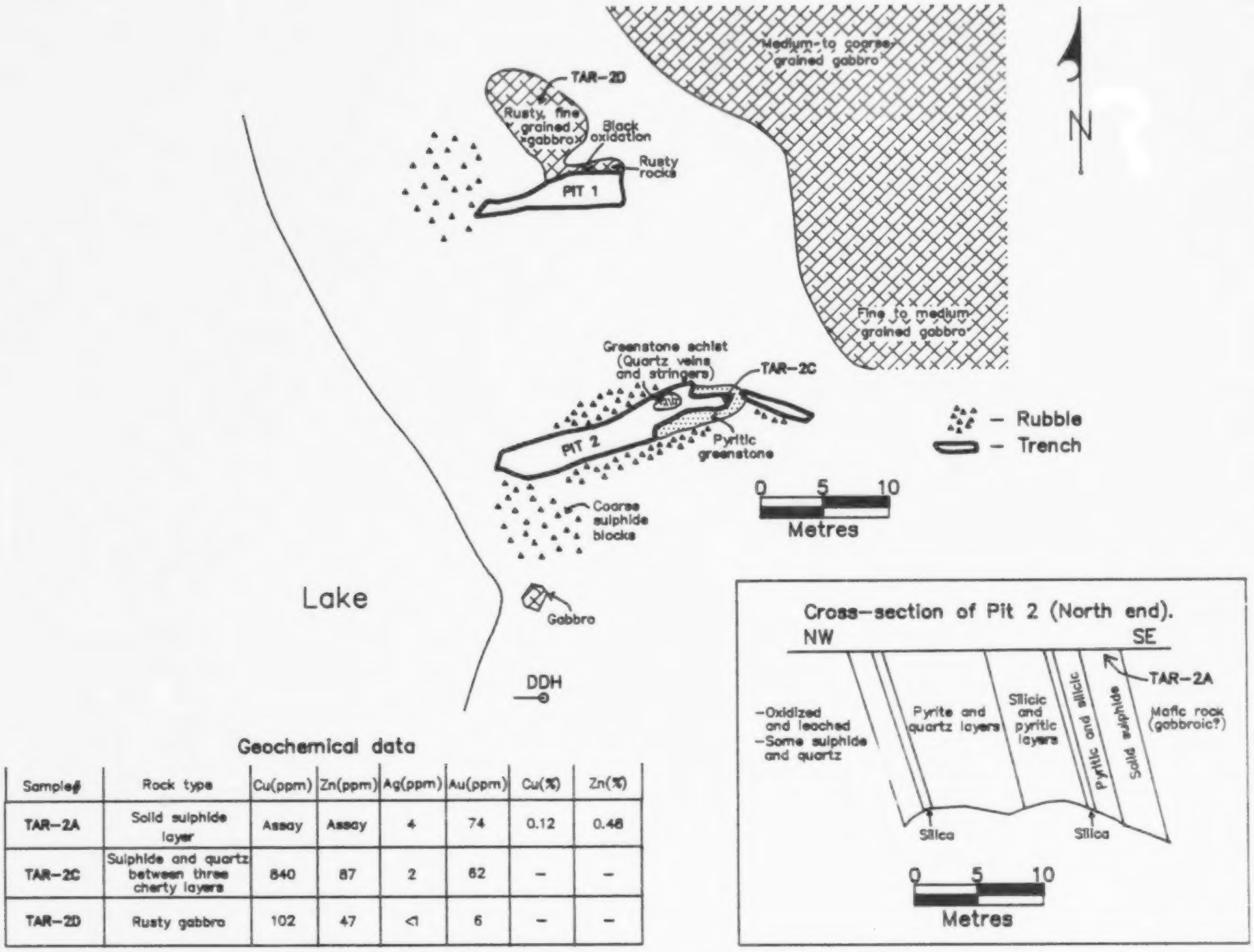

N
30
Bartley Lake
▤ Mafic intrusions: gabbro, diorite
▽ Felsic volcanic rocks: rhyolite
⠿ Intermediate volcanic rocks
Geology after Bateman and Harrison, 1945.
2 drill holes by H.B.E.D. (A.F. 90438)
0
0.5
1
Kilometre

Figure 30-1: Geological setting of occurrence #30 (63K/13SE).


Medium-to coarse-grained gabbro
TAR-2D
Rusty, fine grained gabbro
Black oxidation
Rusty rocks
PIT 1
N
Fine to medium grained gabbro
Greenstone schist (Quartz veins and stringers)
TAR-2C
– Rubble
– Trench
PIT 2
Pyritic greenstone
0
5
10
Metres
Coarse sulphide blocks
Lake
Gabbro
DDH
Cross-section of Pit 2 (North end).
NW
SE
TAR-2A
-Oxidized and leached
-Some sulphide and quartz
Pyrite and quartz layers
Silicic and pyritic layers
Pyritic and silicic
Solid sulphide
Mafic rock (gabbroic?)
Silica
Silica
0
5
10
Metres

Geochemical data

Sample#	Rock type	Cu(ppm)	Zn(ppm)	Ag(ppm)	Au(ppm)	Cu(%)	Zn(%)
TAR-2A	Solid sulphide layer	Assay	Assay	4	74	0.12	0.48
TAR-2C	Sulphide and quartz between three cherty layers	840	87	2	62	–	–
TAR-2D	Rusty gabbro	102	47	<1	6	–	–

Figure 30-2: Geochemical data, trench and sample locations at occurrence #30 (63K/13SE).

REFERENCES:

Assessment File 90438
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

Stewart, J.W.
1977: Gold Showings, N.E. of Flin Flon. Unpublished report, Manitoba Energy and Mines, Minerals Division.

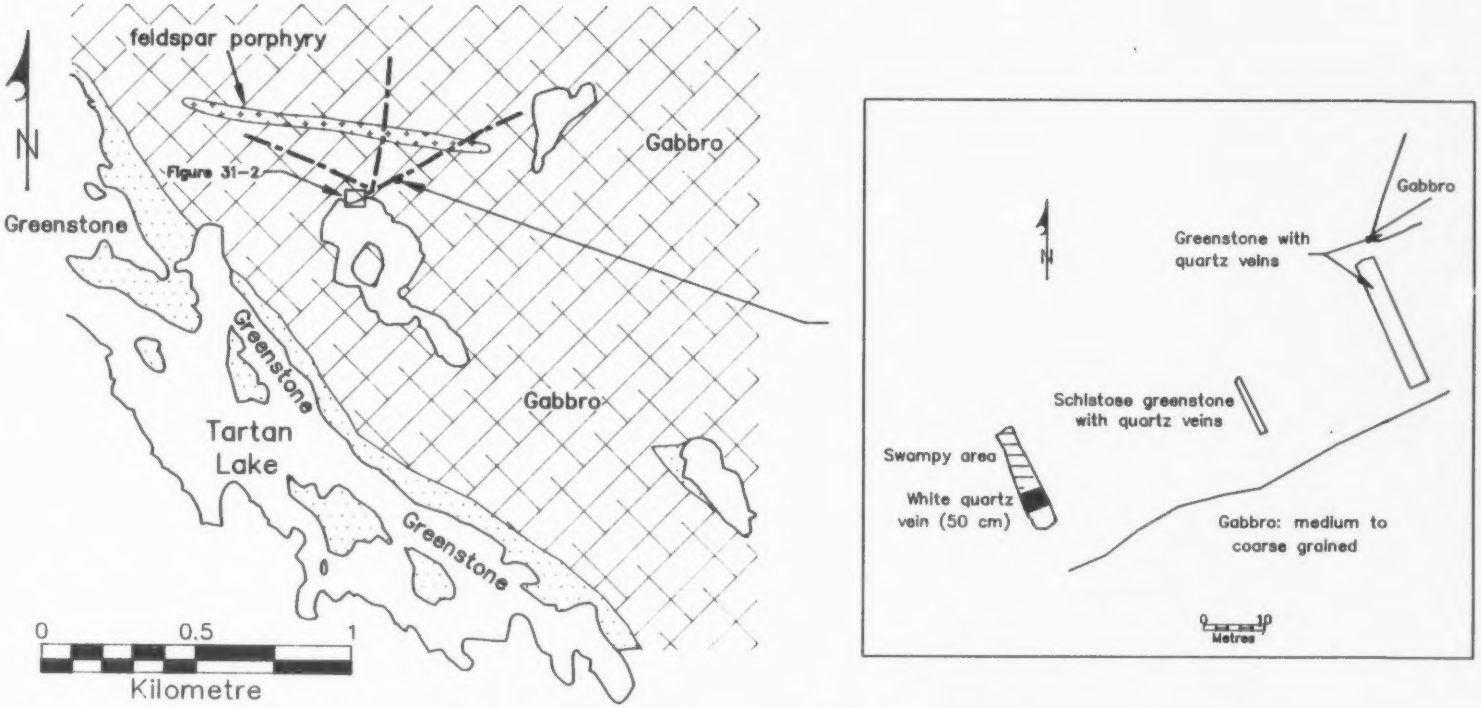

N
feldspar porphyry
Figure 31-2
Gabbro
Greenstone
Greenstone
Tartan
Lake
Greenstone
Gabbro
0
0.5
1
Kilometre
N
Gabbro
Greenstone with
quartz veins
Schistose greenstone
with quartz veins
Swampy area
White quartz
vein (50 cm)
Gabbro: medium to
coarse grained
0
10
Metres

Figure 31-1: General geology, and trench locations at occurrence #31 (63K/13SE). Geology after Bateman and Harrison, 1945.

LOCATION: 31

NAME: MUSKOKA

UTM: 6080773N 325548E

AREA: A small lake 0.5 km east of the southern part of Tartan Lake.

AIRPHOTO: A26397-116

ACCESS:

Via Tartan Lake Road, boat and trail directly east from Tartan Lake.

EXPLORATION SUMMARY:

The Muskoka group of six claims (Muskoka 1,5-9) were staked in 1930. Pit and trenches were dug on all the Muskoka claims. The area has been drilled and there is old drill core on the site; however, drill hole locations are not known.

GEOLOGICAL SETTING:

Mineralization occurs in crenulated greenschists that have a strong fabric and an indication of compositional layering. These rocks were probably derived by alteration of the gabbro along a fracture/shear since the greenschists appear to be enclosed within the gabbro.

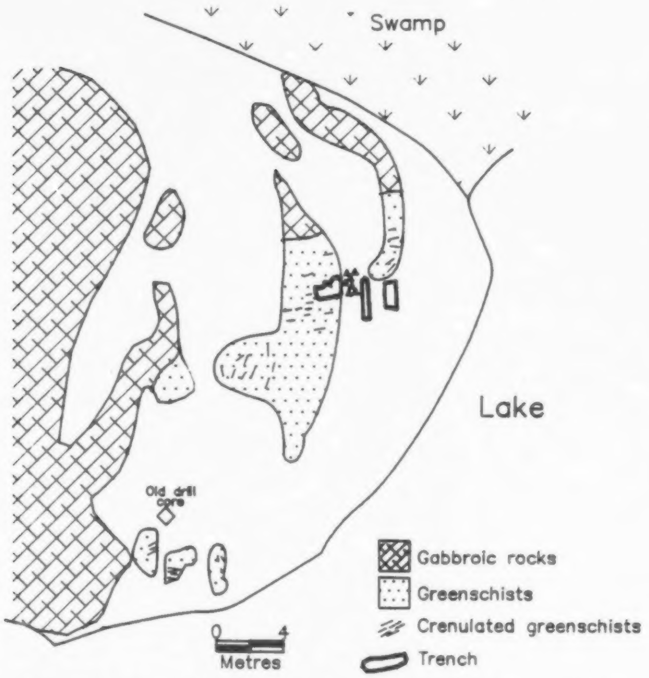


Figure 31-2: Detailed geology, and trench locations at occurrence #31 (63K/13SE).

MINERALIZATION:

The schist zone is 6-20 m thick, and mineralized over a width of 1-2 m with quartz ± minor chalcopyrite, some solid pyrite and a tourmaline lens several centimetres in diameter (Fig. 31-1).

A separate occurrence is shown on Bateman and Harrison's (1945) map approximately 125 m to the east. The trenches located expose a quartz vein, 0.3-1.2 m thick, cutting a thick (15-20 m) zone of greenschist in metagabbro. The quartz contains trace chalcopyrite, pyrite and some sericite. The two sets of trenches are considered to be part of the same structure (Fig. 31-1).

GEOCHEMICAL DATA:

Two samples were collected for analysis: a grab sample of pyritic (20%) quartz-schist and a chip sample of the quartz vein returned 570 ppb Au and 150 ppb Au, respectively.

CLASSIFICATION:

Quartz and carbonate veins in altered gabbroic rocks.

REFERENCES:

Bateman, J.D.
1945: Gold deposits east of Flin Flon; Geological Survey of Canada, Paper 45-12.

Bateman, J.D. and Harrison, J.M.
1944: Mikanagan Lake Map Descriptive Notes; Geological Survey of Canada, Ottawa, Paper 44-22.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832; one inch to one mile; Geological Survey of Canada, Ottawa.

Mineral Inventory Card 63K/13 Au8
Manitoba Energy and Mines, Minerals Division.

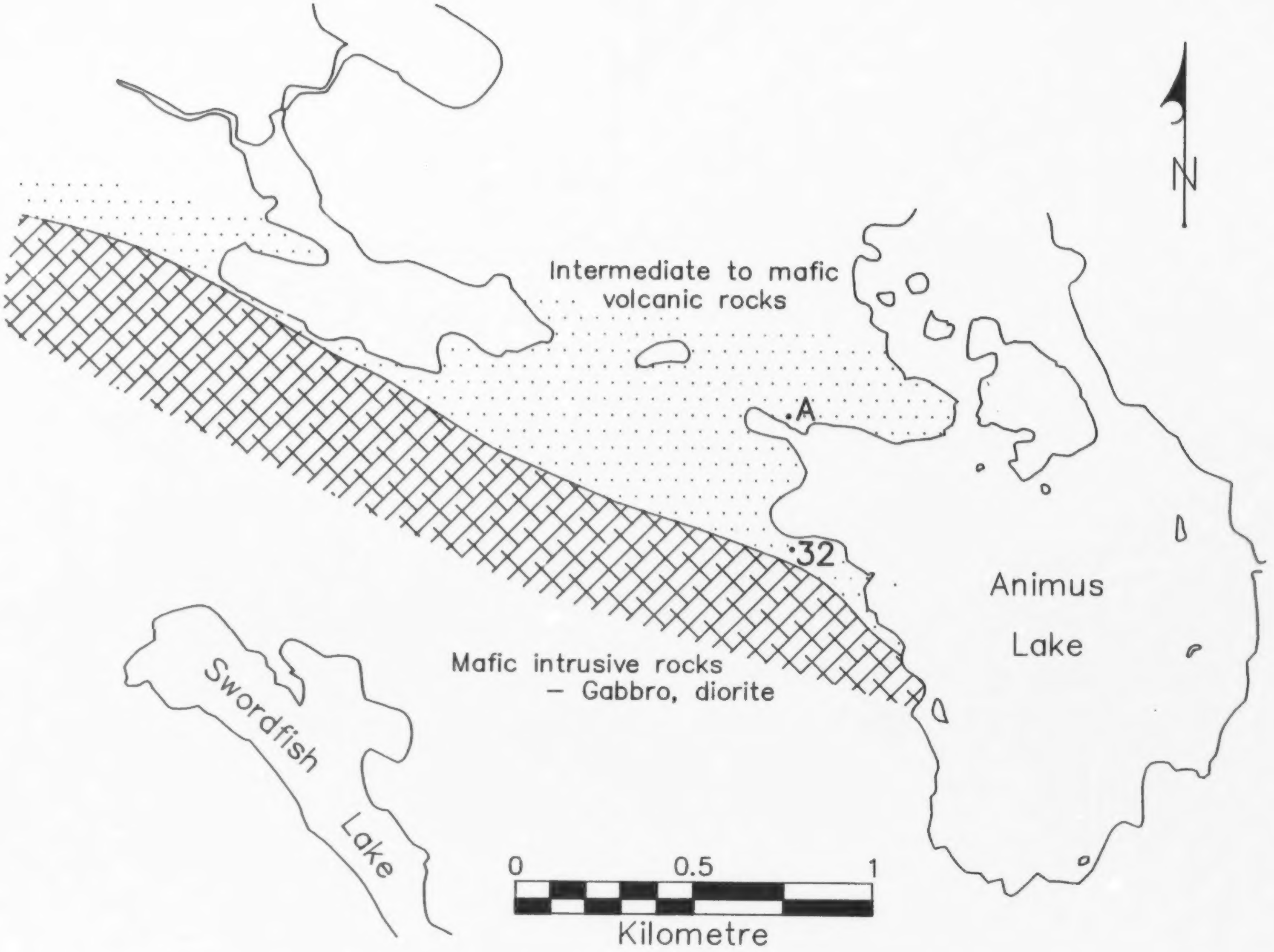

Intermediate to mafic
volcanic rocks
.A
.32
Animus
Lake
Mafic intrusive rocks
– Gabbro, diorite
Swordfish
Lake
N
0
0.5
1
Kilometre

Figure 32-1: Geological setting of occurrence #32 (63K/13SE). Geology after Bateman and Harrison, 1945.

LOCATION: 32

NAME

UTM: 6081372N 332242E

AREA: Southwest shore of Animus Lake

AIRPHOTOS: A26328-20, -22, -166

ACCESS:

Via plane from Flin Flon or via Kississing Lake Road, Lac Aimee Road and trail from Mikanagan Lake.

EXPLORATION SUMMARY:

Noted as a sulphide occurrence by Bateman and Harrison (1945). The pits and trenches probably predate 1945. Several small post-1945, i.e. recent, pits are present on the shore of a small bay at Locality A (Fig. 32-1).

GEOLOGICAL SETTING:

Mineralization occurs in volcanic rocks of andesitic composition near the contact of a large body of fine- to medium-grained gabbro.

MINERALIZATION:

Solid sulphide blocks (pyrite, pyrrhotite, chalcopyrite) approximately 30 cm thick occur in pit 1 and in the rubble pile from this pit (Fig. 32-2). Minor pyrite, pyrrhotite and chalcopyrite are present in andesitic rocks at Locality A.

GEOCHEMICAL DATA:

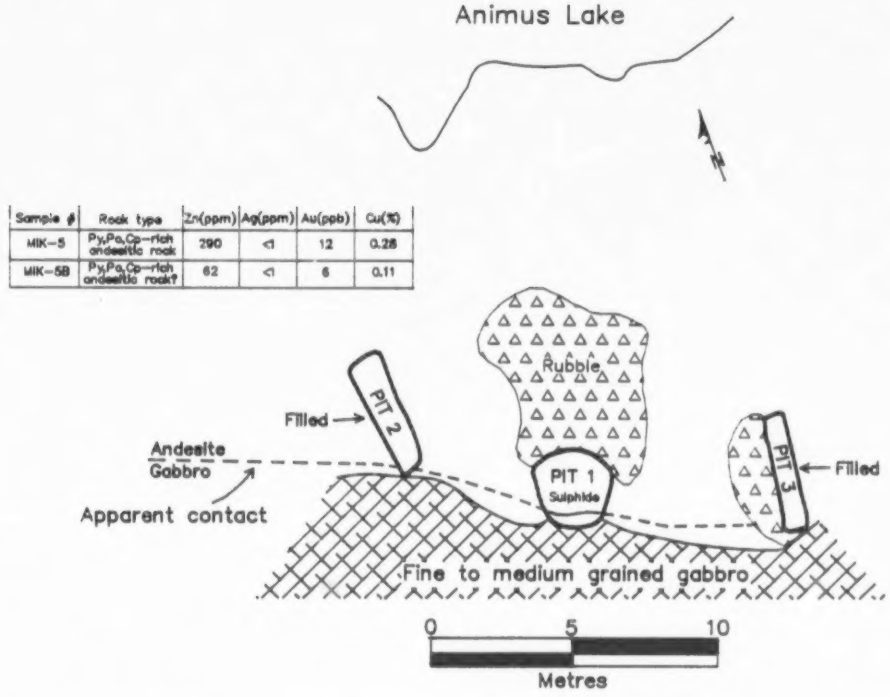
Two grab samples were assayed (see Fig. 32-2).

CLASSIFICATION:

Not certain. Sulphide stratum(?) or sulphide mobilizate at gabbro contact.

REFERENCE:

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.



Sample #	Rock type	Zn(ppm)	Ag(ppm)	Au(ppb)	Cu(%)
MIK-5	Py,Po,Cp-rich andesitic rock	290	<1	12	0.28
MIK-5B	Py,Po,Cp-rich andesitic rock?	62	<1	6	0.11

Figure 32-2: Geochemical data, and trench locations at occurrence #32 (63K/13SE).

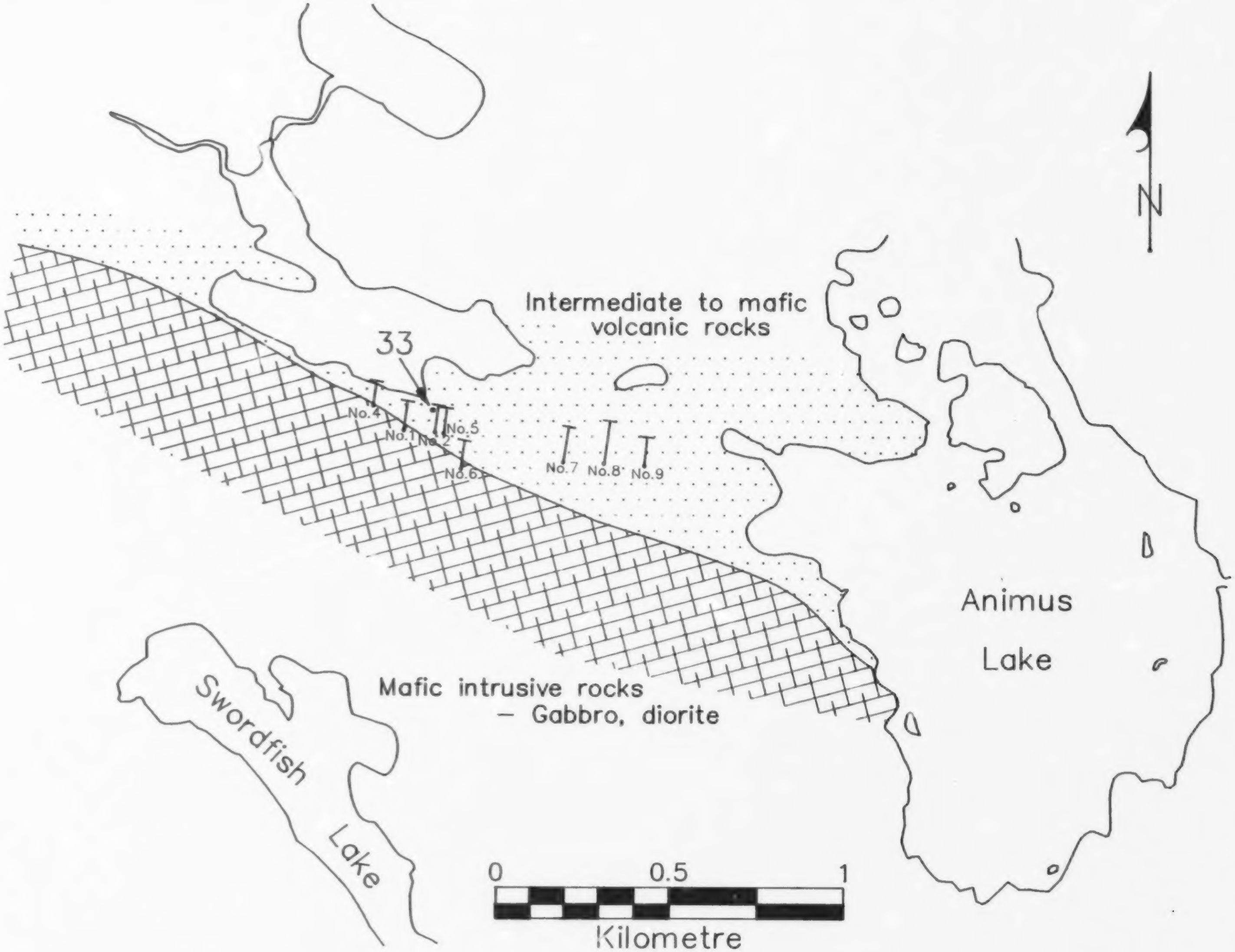

N
Intermediate to mafic
volcanic rocks
33
No.4
No.1
No.2
No.5
No.6
No.7
No.8
No.9
Animus
Lake
Mafic intrusive rocks
– Gabbro, diorite
Swordfish
Lake
0
0.5
1
Kilometre

Figure 33-1: Geological setting of occurrence #33 (63K/13SE). Geology after Bateman and Harrison, 1945. , 8 drill holes (A.F. 90444).

LOCATION: 33 NAME:

UTM: 6081702N 330220E AREA: Between Tartan Lake and Animus Lake AIRPHOTO: A20040-97

ACCESS:

Via Tartan Lake Mine Road, boat to east end of Tartan Lake, or plane from Flin Flon.

EXPLORATION SUMMARY:

A 12 x 3 x 1.5 m deep trench occurs approximately 30 m southeast of the shoreline in a small bay as shown on Bateman and Harrison's Geological Map (1945). Eight holes totalling 564 m were drilled on the PH claims in 1952 by A.O. Lantz (A.F. 90444).

GEOLOGICAL SETTING:

The trench occurs in an area of thick jack pine and only small outcrops are present. An exposure of massive mafic volcanic rock occurs at the south end of the trench. A gabbroic body is situated to the south of the occurrence (Fig. 33-1). The drill holes intersected interlayered units of sheared to massive andesite and fine- to medium-grained greywacke.

MINERALIZATION:

Heavily mineralized sections of pyrrhotite, pyrite and graphite are present in zones of strongly sheared andesite. Drill hole No. 2 intersected 17.5 m of well mineralized andesite. Drill hole No. 5 intersected 1.0 and 1.7 m of quartz with "much" pyrite and pyrrhotite present. Marcasite was seen in some cavities of quartz-rich blocks in rubble near the trench. No mineralization was reported in the greywacke.

GEOLOGICAL DATA:

A sulphide-rich grab sample returned 700 ppm Cu, 54 ppm Zn and 12 ppb Au.

CLASSIFICATION:

Not certain. Sulphide stratum or mineralized shear zone (?)

REFERENCES:

Assessment File 90444
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

LOCATION: 34 NAME:

UTM: 6081629N 324738E

AREA: East side of Narrows between the north and south parts of Tartan Lake

AIRPHOTO: A26397-157

ACCESS:

Tartan Lake Mine Road

EXPLORATION SUMMARY:

The property was initially staked as the Killarney (P87) and Monica 2 claims (P214) in 1931 by T. Creighton and E. Tahey, respectively. Ventures Limited are reported to have sunk most of the 14 pits and trenches located on the claims by the end of 1936.

Nesnah Mining and Exploration Company Limited optioned the claims in 1945, and completed 37 drill holes before releasing their option. Surface work was reported on the Lin claim (restaked Killarney claim) by J. Murray between 1962 and 1974. The property is currently part of Granges Tartan Lake Mine holdings.

GEOLOGICAL SETTING:

Gold occurs in chlorite-carbonate schist that is cut by veins of quartz. The schistose zones occur in gabbroic rocks that form the west end of a large gabbroic complex (Fig. 34-1.). The complex is a multiple intrusion that can be subdivided on the basis of dominant lithologies into an outer margin of medium- to coarse-grained gabbro, coarse grained melanocratic gabbro, diorite intrusions into leuco- to melanocratic gabbro, and an igneous breccia (Peloquin and Gale, 1985). This zone of altered rocks has been termed the Base Line Zone and is approximately parallel to the strike of the Tartan Lake Mine mineralized zone.

MINERALIZATION:

The mineralized zone strikes 067° and has been exposed in test pits for more than 500 m.

Late movements on the shears have set up a system of tension fractures filled with white, massive quartz and carbonate in the chloritic schists and the gabbroic complex (Fig. 34-2). The veins contain minor (1 - 10%) pyrite, trace chalcopyrite, tourmaline and free gold. The chlorite-carbonate schist (up to 15 m wide) is impregnated with pyrite in the form of coarse cubes and narrow sulphide veinlets. Although intersections with gold have been encountered throughout the length of this schist zone, no orebodies have been delineated to date.

GEOCHEMICAL DATA:

Of the 37 holes drilled by Nesnah Mining and Exploration Company Limited only four holes did not intersect the mineralized zone. Analytical data from 13 drill holes are provided in Table 34-1; however, locations for the drill holes are not available (Nesnah Corporation File). Grab samples taken from muck piles around the trenches were analyzed and returned values of 2900 ppb Au, 5000 ppb Au and 6000 ppb Au.

CLASSIFICATION:

Quartz veins in chlorite-carbonate-quartz schists derived from altered gabbroic and dioritic rocks.

REFERENCES:

Bateman, J.D.
1945: Gold Deposits East of Flin Flon; Geological Survey of Canada, Ottawa, Paper 45-12.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

Gale, G.H. and Ferreira, K.
1987: Geological setting of the Tartan Lake Mine; Open File Report 87-8, Manitoba Energy and Mines, Minerals Division.

Nesnah Mining and Exploration Complany Limited
SE 13, 63K; Corporation File, Manitoba Energy and Mines, Minerals Division.

Peloquin, S. and Gale, G.H.
1985: Geological setting of the Tartan Lake gold deposits; Manitoba Energy and Mines, Geological Services Branch, Report of Field Activities 1985, p. 71-73.

Peloquin, S., Tannahill, B., and Gale, G.H.
1986: Geological Setting of the Tartan Lake Gold Deposits; Manitoba Energy and Mines, Geological Services Branch, Report of Field Activities, 1986, p. 56-64.

Wright, J.F. and Stockwell, C.H.
1934: Gold occurences of the Flin Flon District; Geological Survey of Canada, Summary Report 1933, Pt. C, p. 8-10.

TABLE 34-1

Gold Assays from Nesnah Mining and Exploration Company Limited (1946)

Hole #	Footage	Oz. per ton	Hole #	Footage	Oz. per ton
A-3	18.4-19.6	0.62	A-6	21.0-21.8	0.16
	26.3-27.5	0.60		25.7-27.7	0.09
				27.7-29.7	0.10
A-4	28.7-30.4	0.02		29.7-31.0	0.38
	30.4-32.8	0.05		31.0-32.7	0.02
	38.2-35.4	0.02		32.7-33.7	0.34
	35.4-37.4	0.30		33.7-35.9	0.02
	37.4-38.9	0.02		35.9-37.9	0.36
	38.9-42.6	NIL		37.9-39.9	1.80
	42.6-45.6	0.08		39.9-41.4	0.17
A-8	27.5-29.5	0.01	A-11	41.3-42.1	0.64
	29.5-31.6	0.07		53.0-55.0	0.12
	31.6-34.1	0.40		55.0-57.5	0.05
A-13	89.3-90.0	0.12	A-16	75.5-78.6	0.16
	90.0-90.6	LOST CORE		78.6-81.8	Tr.
	90.6-92.5	Tr.		81.8-83.8	0.02
	92.5-95.3	0.06		83.8-85.8	0.64
	95.3-96.3	7.58		85.8-87.8	0.01
	96.3-99.1	0.02		87.8-89.8	0.06
A-20	58.3-60.2	1.40	A-23	59.8-62.4	0.60
	60.3-61.5	0.02			
	61.5-65.8	0.01	A-24	62.3-64.4	0.86
	65.8-68.8	0.07		64.4-67.1	Tr.
	68.8-70.0	0.38		67.1-70.1	0.06
	70.0-71.3	0.01			
A-25	64.3-64.7	0.48	A-36	22.3-24.3	0.10
	64.7-65.9	LOST CORE		24.4-27.9	0.01
	65.9-68.6	0.02		27.9-30.0	0.01
	68.6-72.1	0.02		30.0-31.7	0.10
	72.1-73.9	Tr.			
	73.9-75.7	0.01	A-37	62.8-64.3	0.48
	75.7-76.3	LOST CORE		64.3-67.0	0.01
	76.3-78.3	0.28			
	78.3-80.3	0.58			

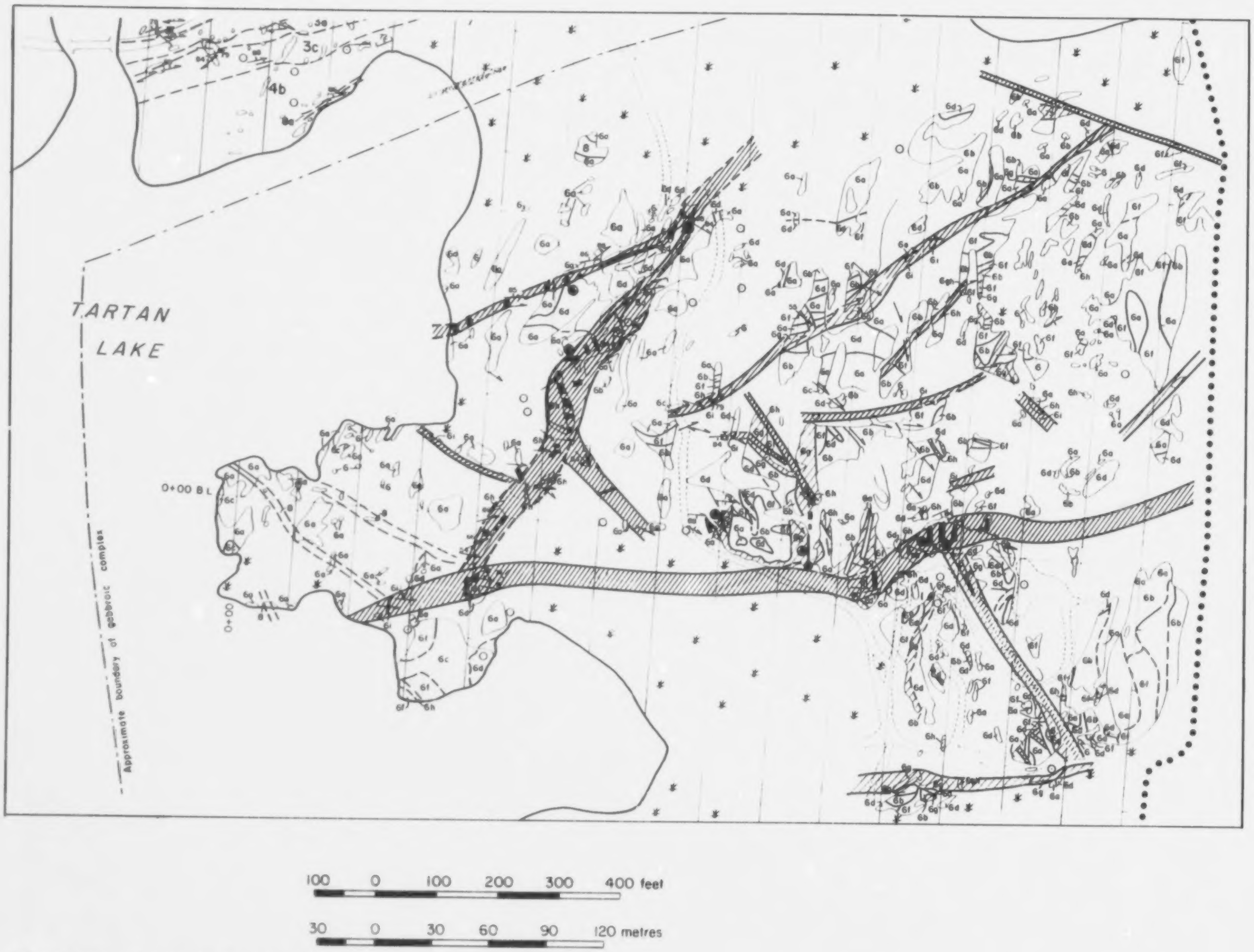

TARTAN
LAKE
Approximate boundary of gabbroic complex
0+00 BL
0+00
3c
4b
6a
6b
6c
6d
6f
6h
100 0 100 200 300 400 feet
30 0 30 60 90 120 metres

Figure 34-1: Geological setting of occurrence #34 (63K/13SE).

LEGEND

8 FELDSPAR-QUARTZ PORPHYRY, SILLS, DYKES
- a) coarse grained
- b) fine grained

7 RUBY LAKE GABBRO/DIORITE, SILLS, DYKES

6 GABBROIC COMPLEX
- a) gabbro, medium grained
- b) gabbro, medium grained, with fine grained diorite dykes
- c) gabbro, medium grained, with aphanitic intermediate dykes
- d) diorite, fine grained
- e) diorite, aphanitic
- f) igneous breccia - medium grained gabbroic clasts in a fine grained dioritic matrix
- g) altered gabbro, non- to weakly schistose, pale green chloritic
- h) altered gabbro, non- to weakly schistose, chlorite - carbonate
- i) altered gabbro, schistose, chlorite - carbonate - quartz ± fuchsite ± tourmaline ± sericite

5 'KNOTTED' GABBRO
- a) hornblende plagioclase poikiloblastic
- b) microphyric

4 CHLORITIZED MAFIC ROCKS
- a) mafic volcanic rock (tuffaceous?)
- b) schistose

3 FELSIC TO INTERMEDIATE VOLCANICLASTIC ROCKS
- a) felsic tuffaceous rock
- b) intermediate tuffaceous rock
- c) intermediate volcaniclastic rock

2 MAFIC VOLCANICLASTIC AND SEDIMENTARY ROCKS
- a) mafic volcanic - derived wacke
- b) mafic siltstone

1 ANDESITIC VOLCANIC ROCKS
- a) aphyric flow
- b) pyroxene - phyric flow
- c) fragmental

To accompany Open File Report OFR87-8

Geology by S. Peloquin, B. Tannehill, and G. Gale, 1985-86

NTS 63K/13SE

SYMBOLS

( )	Outcrop
	Area of shallow overburden
/ /	Lithological contact, known, assumed
● ● ● ●	Limit of geological mapping at 1:1200 scale
∿∿∿	Fault, known
∿ ∿	, approximate
∿∿∿	Zone of chloritization and shearing, known
∿ ∿ ∿	, approximate
∿?∿	, assumed
═	Zone of alteration, 6g
▨	, 6h - 6i
┼	Antiform, assumed axial trace
/	Bedding, inclined, vertical, dip unknown
/	Schistosity, inclined, vertical, dip unknown
/	Cleavage, regional, inclined, vertical, dip unknown
/	Cleavage, axial, (kink folds), inclined, vertical
	Layering
⊕	Deformed pillows
∩	Pillowed flow, tops unknown
●	Gold occurrence
	Decline, Tartan Lake gold deposit
	Surface projection of the Main Zone, Tartan Lake gold deposit
○	Diamond drill hole
/	Trench
*	Swamp
	Road, all weather
	Drill road
	Bridge

The grid that was used for reference in this mapping was cut in 1985 by Granges Exploration Ltd.

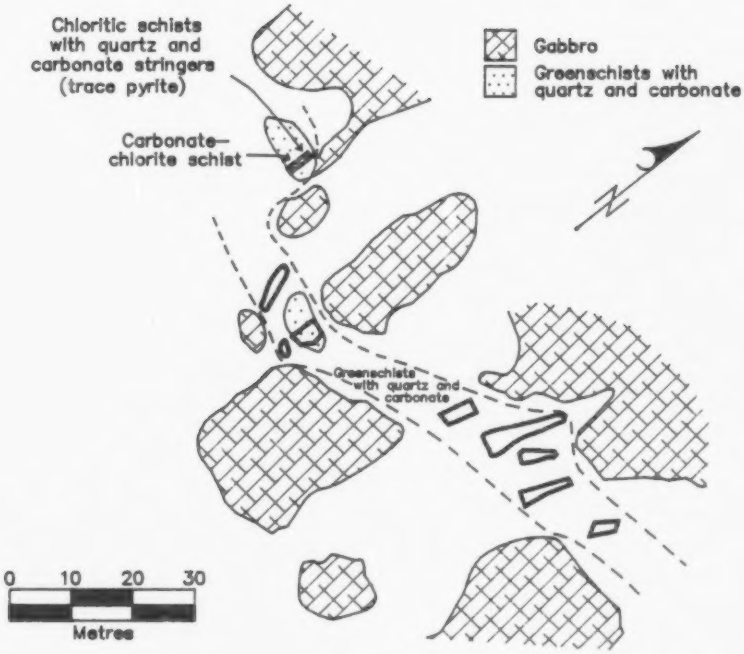

Chloritic schists
with quartz and
carbonate stringers
(trace pyrite)
Carbonate—
chlorite schist
Gabbro
Greenschists with
quartz and carbonate
N
Greenschists
with quartz and
carbonate
0
10
20
30
Metres

Figure 34-2: Trench locations on the Monica 2 claim (63K/13SE).

LOCATION: 35 NAME: RUBY LAKE

UTM: 6081690N 323762E AREA: Northeast corner of Ruby Lake AIRPHOTO: A26397-157

ACCESS:

Via Tartan Lake Mine Road.

EXPLORATION SUMMARY:

The Ruby 2 claims were initially staked in 1931 by W. Ferguson and A. Kirkland. Consolidated Mining and Smelting Company optioned the property and completed several trenches in 1932. In 1933 Hanson Construction Company removed 208 tonnes of ore from an open cut measuring 18 m in length and 7.3 m in depth. Heney-Maloney Gold Mines completed 450 m of diamond drilling in 1935 before dropping the option later the same year. A small amount of surface trenching was completed by J. Callinan in 1936.

GENERAL GEOLOGY:

The trenches follow a shear zone in intermediate volcanic rocks that have been metamorposed into chloritic and sericitic schists. A series of closely spaced quartz and carbonate stringers in the schist are parallel to schistosity (080°). A massive diorite intrusion bounds the schists north of the Ruby claims, and a 15 m thick dyke of feldspar porphyry at the east end of Ruby Lake strikes parallel to the enclosing schist.

MINERALIZATION:

Gold occurs in a mineralized zone that has an average width of 3.5 m, and is exposed in trenches and test pits for a total length of 52 m (Bateman, 1945, p. 3). The quartz and associated schists contain minor (1-10%) pyrite and chalcopyrite and trace amounts of pyrrhotite and arsenopyrite. Black tourmaline, ankerite and green mica were also found in the veins. Visible gold was reported by Bateman (1945) and Brownell (1932). Some brecciation was noted in the mineralized zone with quartz and carbonate as cementing material.

Another schistose zone was found on the Ruby 1 claim about 300 m north across strike from the Ruby zone (Brownell, 1932). The mineralization is similar to that at the Ruby zone but contains less quartz. A mineralized aplite dyke occurs on the north side of this schistose zone, which is exposed in two trenches (2 x 1.5 x 1 m; 1.2 x 1.5 x 0.3 m).

GEOCHEMICAL DATA:

Material sent to H.B.M.S. by the Hanson Construction Co. assayed 7 and 5.6 g/tonne Au.

CLASSIFICATION:

Quartz and carbonate veins in schistose volcanic rocks.

REFERENCES:

Bateman, J.D.
1945: Gold deposits east of Flin Flon; Geological Survey of Canada, Paper 45-12.

Brownell, G.M.
1932: Tartan Lake Group; SE-13, 63K; unpublished Information File, Manitoba Energy and Mines, Mineral Division.

Mineral Inventory Card 63K/13 Au4
Manitoba Energy and Mines, Mineral Division.

Peloquin, S. and Gale, G.H.
1985: Geological setting of the Tartan Lake gold deposits; Manitoba Energy and Mines, Report of Field Activities 1985, p. 71-73.

Peloquin, S., Tannahill, B., and Gale, G.H.
1986: Geology of the Tartan Lake gold deposits; Manitoba Energy and Mines, Geological Services Branch, Report of Field Activities, 1986, p. 56-64.

Wright, J.F. and Stockwell, C.H.
1934: Gold occurrences of the Flin Flon District; Geological Survey of Canada, Summary Report 1933, Pt. C., p. 8-10.

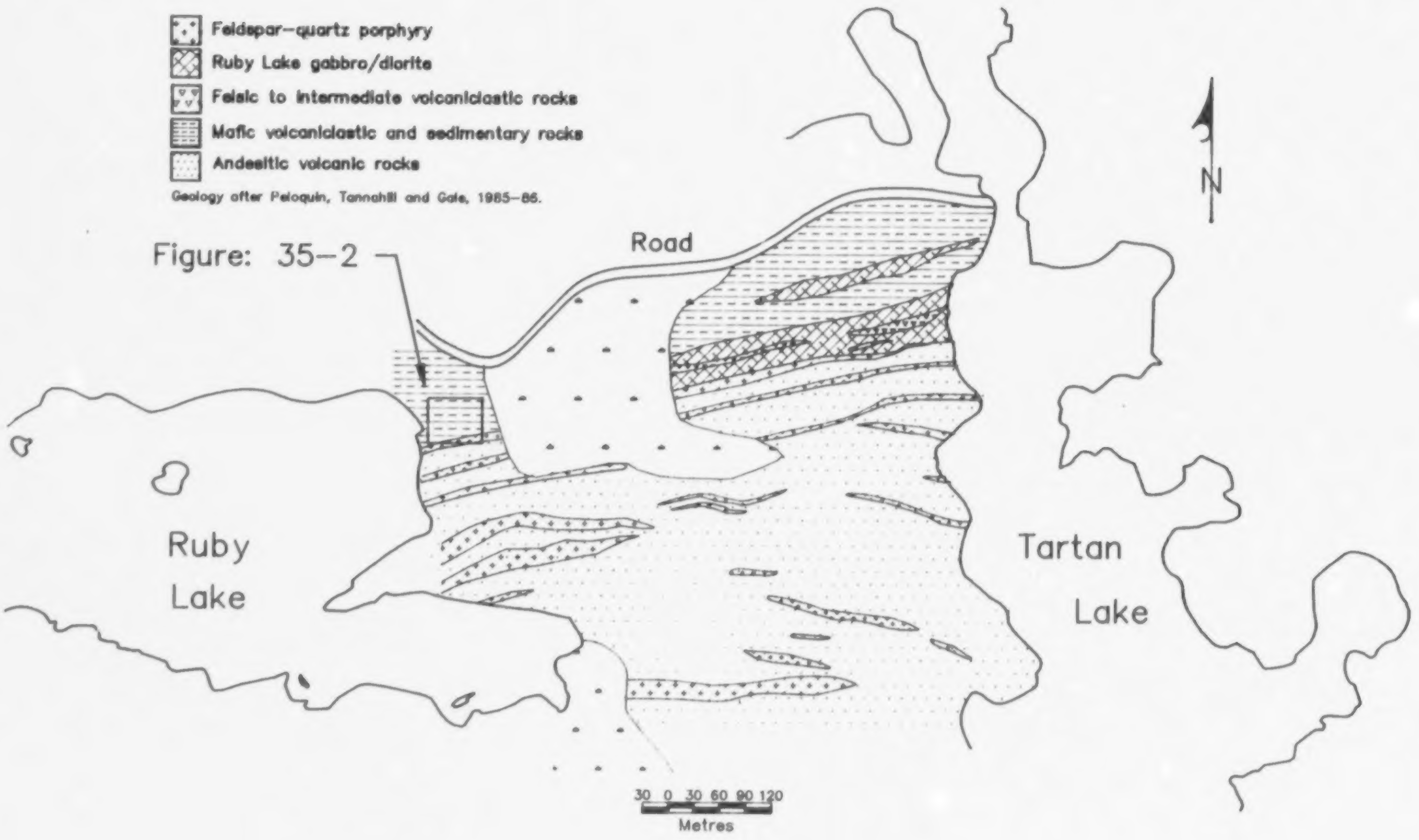
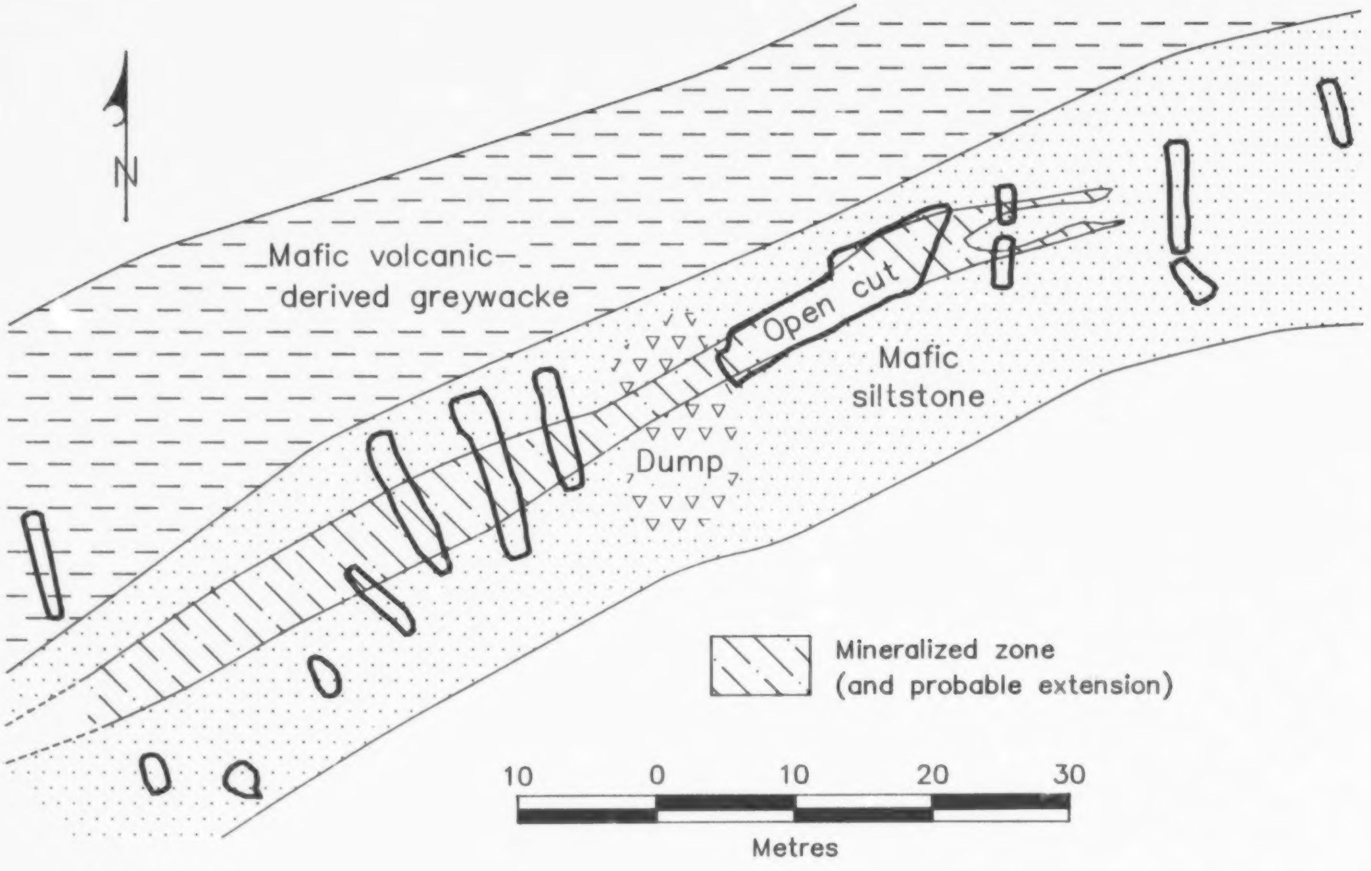
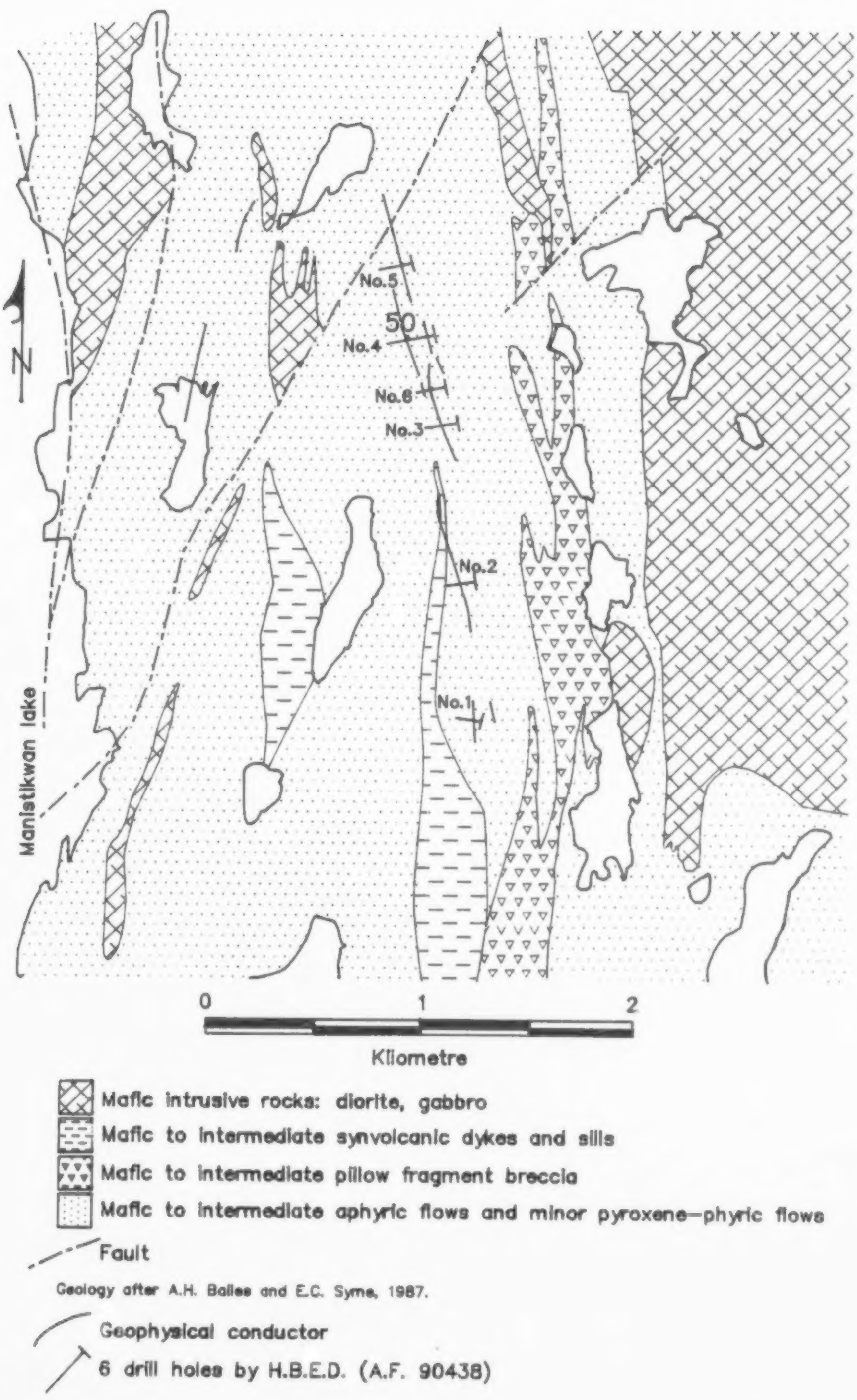

▨ Feldspar–quartz porphyry
▨ Ruby Lake gabbro/diorite
▨ Felsic to intermediate volcaniclastic rocks
▤ Mafic volcaniclastic and sedimentary rocks
▨ Andesitic volcanic rocks
Geology after Peloquin, Tannahill and Gale, 1985–86.
Figure: 35–2
Road
N
Ruby Lake
Tartan Lake
30 0 30 60 90 120
Metres

Figure 35-1: Geological setting of the Ruby Lake occurrence (#35 - 63K/13SE).



N
Mafic volcanic-
derived greywacke
Open cut
Mafic
siltstone
Dump
Mineralized zone
(and probable extension)
10
0
10
20
30
Metres

Figure 35-2: Detailed geology, and trench locations at occurrence #35 (63K/13SE). Geology after Bateman (1945); Peloquin et al. (1986).


No.5
50
No.4
No.6
No.3
No.2
No.1
N
Manistikwan lake
0
1
2
Kilometre
▨ Mafic intrusive rocks: diorite, gabbro
▤ Mafic to intermediate synvolcanic dykes and sills
▽ Mafic to intermediate pillow fragment breccia
░ Mafic to intermediate aphyric flows and minor pyroxene–phyric flows
Fault
Geophysical conductor
6 drill holes by H.B.E.D. (A.F. 90438)

Geology after A.H. Bailes and E.C. Syme, 1987.

Figure 50-1: Geological setting of occurrence #50 (63K/13SE).

LOCATION: 50 NAME:

UTM: 6074585N 325083E AREA: Approximately 1.6 km east of the northeast arm of Manistikwan Lake AIRPHOTO: A26397-120

ACCESS:

Via boat to east shore of Manistikwan Lake.

EXPLORATION SUMMARY:

A geophysical survey (HLEM) of the Lit claims was undertaken by H.B.E.D. in 1952-53. Six holes were drilled on several of the conductors located.

GEOLOGICAL SETTING:

The area is underlain by mafic to intermediate flow rocks (Bailes and Syme, 1987). Drill logs indicate the presence of abundant altered felsic (dacitic) rocks.

MINERALIZATION:

The drill holes intersected an extrusive zone of altered dacitic rocks and at least two layers of sulphide mineralization. Sulphide layers in graphitic schists were intersected in drill holes 2, 4, and 5, west of solid sulphide and near solid sulphide layers of pyrrhotite, pyrite and minor chalcopyrite that occur farther down the hole and east of the graphitic schists in holes 1, 3, 4, and 5. Disseminated sulphide occurs in altered dacitic, rhyolitic and quartz-feldspar porphyritic rocks in all of the six drill holes. In addition, holes 3, 4, and 5 contain 30-50 m thick sections with abundant chloritic, sericitic and carbonatized schists that have minor pyrrhotite, pyrite and chalcopyrite.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

The sulphide-bearing graphitic schists are probably chemical sediments and are separated from the solid sulphide layers of pyrrhotite and pyrite (chemical sediments?) by approximately 100 m of altered rocks in holes 4 and 6.

The origin of altered dacitic rocks and the chlorite-sericite-carbonate schists are problematic. These rocks could represent a syn-volcanic massive sulphide-type alteration zone or a zone of shearing and carbonatization. There are no records to indicate if these altered dacitic rocks with disseminated sulphide were sampled extensively and assayed for gold.

REFERENCES:

Assessment Files 90437, 90438

Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.

1987: Geology of the Flin Flon-White Lake Area; Manitoba Energy and Mines, Geological Services Branch, Geological Map GR87-1-1.

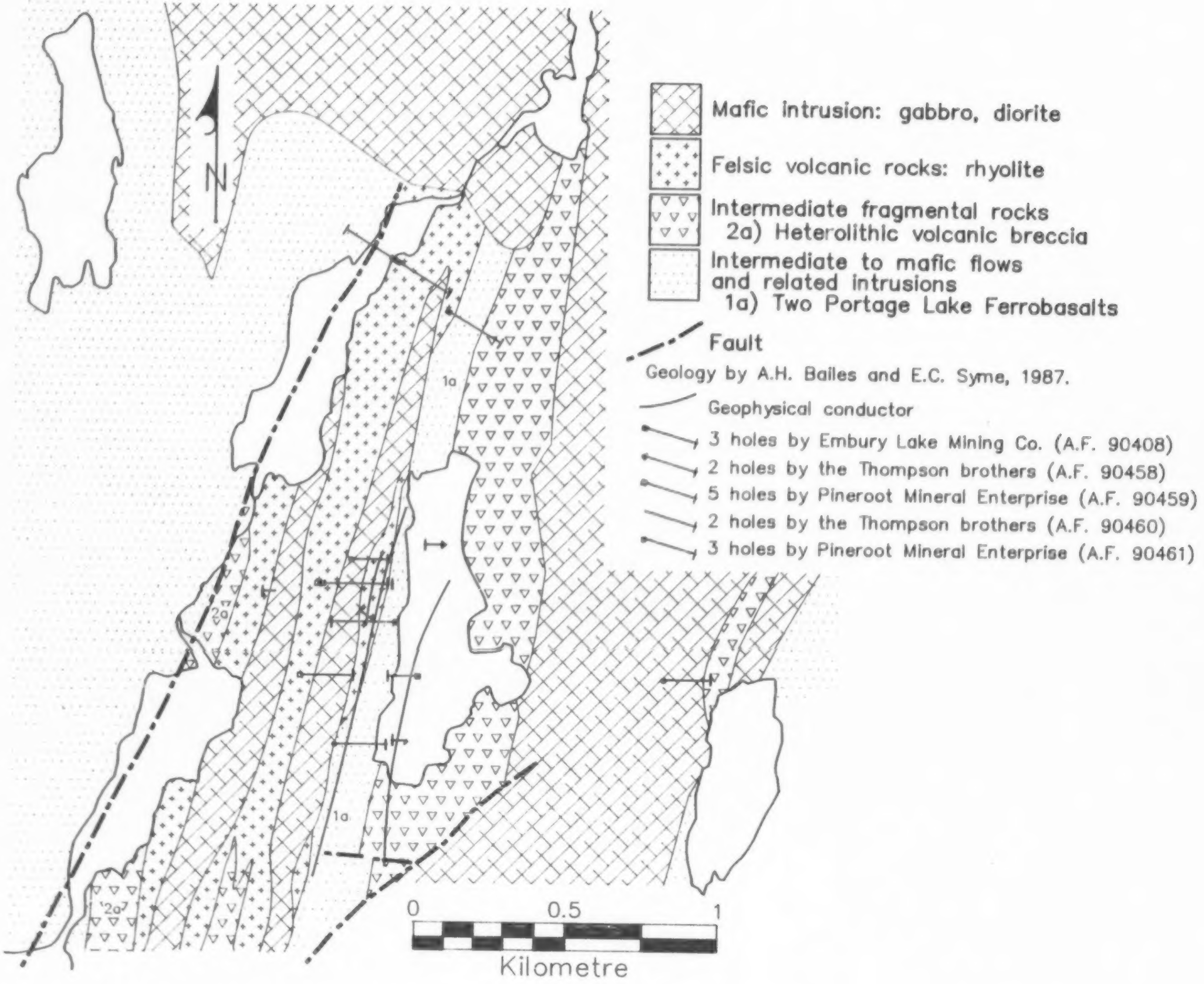

N
Mafic intrusion: gabbro, diorite
Felsic volcanic rocks: rhyolite
Intermediate fragmental rocks
2a) Heterolithic volcanic breccia
Intermediate to mafic flows and related intrusions
1a) Two Portage Lake Ferrobasalts
Fault
Geology by A.H. Bailes and E.C. Syme, 1987.
Geophysical conductor
3 holes by Embury Lake Mining Co. (A.F. 90408)
2 holes by the Thompson brothers (A.F. 90458)
5 holes by Pineroot Mineral Enterprise (A.F. 90459)
2 holes by the Thompson brothers (A.F. 90460)
3 holes by Pineroot Mineral Enterprise (A.F. 90461)
1a
1a
2a
2a
0
0.5
1
Kilometre

Figure 51-1: Geological setting of occurrence #51 (63K/13SE).

LOCATION: 51 NAME: "SULPHIDE" LAKE

UTM: 6070788N 326811E AREA: Southwest shore of Two Portage Lake AIRPHOTOS: A26397-121 and -122

ACCESS:

Via canoe from Highway #10A through Wonderland, Sleep and Bear lakes; via trail from Hwy. #10 northwest of Cuprus Mine; or plane to Bear Lake.

EXPLORATION SUMMARY:

Embury Lake Mining company completed a magnetometer survey and drilled three holes totalling 550 m on the Beaver and Embury claim groups in 1949. Patino Management Services Limited conducted a geophysical survey in 1959. Thompson Brothers drilled two holes (98 m) in 1959 and two holes (284 feet) in 1965. Pineroot Mineral Enterprises drilled eight holes totalling 86.5 m in 1968. A number of old trenches are also present on the property.

GEOCHEMICAL SETTING:

The area is underlain by Two Portage Lake ferrobasalts, Vick Lake andesite tuff (with heterolithic rhyolite fragment-bearing tuff breccia and pumice fragment tuffs), massive rhyolite lobes and mafic intrusions (gabbroic and dioritic) to the east and west (Fig. 51-1). Abundant silicified and altered rocks were noted in the drill core logs.

MINERALIZATION:

Mineralization occurs sporadically throughout the drill core in sheared slightly chloritic andesite, light green dacite, rhyolite and massive feldspar porphyry. Locally sulphides are concentrated in fine grained rhyolite that is highly silicified, fractured and brecciated. This rock contains disseminated to near solid pyrrhotite and pyrite, with trace chalcopyrite and sphalerite. Near solid sulphide (heavy pyrrhotite with sparse pyrite, chalcopyrite, and graphite) is found in light green dacite with numerous narrow quartz-carbonate stringers.

GEOCHEMICAL DATA:

Assay data obtained by Pineroot Mineral Enterprises are contained in Assessment Files 90461 and 90459.

The higher assay values reported are:
0.2% Cu, 2.85% Zn, 0.5 g/ton Au, 7 g/ton Ag, over 0.76 m; and 0.15% Cu, 1.83% Zn, 1.7 g/ton Au, 19 g/ton Ag, over 0.60 m, in drill hole 4 (Assessment File 90459).

CLASSIFICATION:

Probably distal exhalite layers related to a massive sulphide-type deposit.

REFERENCES:

Assessment Files 90408, 90428, 90458, 90459, 90460, 90461
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake Area; Manitoba Energy and Mines, Geological Services Branch, Geological Map GR87-1-1.

LOCATION: 78 NAME:

UTM: 6077890N 331608E AREA: Approximately 0.8 km east of Mikanagan Lake. AIRPHOTO: A19638-100

ACCESS:

Via Kississing Road, Lac Aimee Road and boat on Lac Aimee.

EXPLORATION SUMMARY:

B.B. Syndal staked Copper King in 1921. Surface work was reported in 1925, 1927 and 1934. 598.6 m of drilling was completed between 1928 and 1932. Staked as the K.D. 1 and K.D. 2 claims in 1948 by W.J. Kelly. Trenches were cut in 1950, 1953 and 1961. In 1951, 11 drill holes were completed for a total of 325.6 m on K.D. 1. Mikanagan Mining Company Limited completed nine drill holes (480 m) on K.D. 2 and 12 drill holes (381 m) on K.D. 1 in 1953 (Fig. 78-2).

GEOLOGICAL SETTING:

The mineralized area occurs along a north- to northwest-striking fault zone that cuts a Precambrian "quartz-feldspar porphyry". The intrusion is a northeast-trending domal structure consisting of a pink to greyish feldspathic matrix containing 15 to 20% clear to opalescent light blue quartz phenocrysts (Mineral Inventory Card 63K/13 Cu11). The volcanic rocks to the east were mapped as rhyodacites and mafic to intermediate flows by Cerro Mining, 1971 (Fig. 78-1). Mikanagan Mines drill logs report andesite with lenses of quartz-feldspar porphyry.

MINERALIZATION:

The sulphide occurrence located is a 15 - 100 cm silicified shear zone containing 1 to 50% pyrite and trace chalcopyrite. Quartz veins in the shear zone are white and grey. Malachite staining was observed on some fragments in the rubble piles. The southernmost occurrence indicated by drilling in Assessment File 90436 has not been located. No sulphide occurrence was found at the locality shown on Bateman and Harrison (1945).

GEOCHEMICAL DATA:

A chip sample of silicified rock with less than 10% pyrite and several chalcopyrite stringers in sheared feldspar-phyric andesite returned values of 2.62% Cu, 120 ppm Zn, 248 ppb Au and 7 ppm Ag. A quartz sample with 50% pyrite assayed 2.24% Cu, 75 ppm Zn, 214 ppb Au and 5 ppm Ag. In 1951, drill hole No. 4 intersected 1.5 - 3 m of 2.37% Cu and 10 ppm Ag. No assays were reported by Mikanagan Mines for the 1953 drill holes; however, "sulphide mineralization, copper, silver, gold, and zinc" were noted in most of the drill logs.

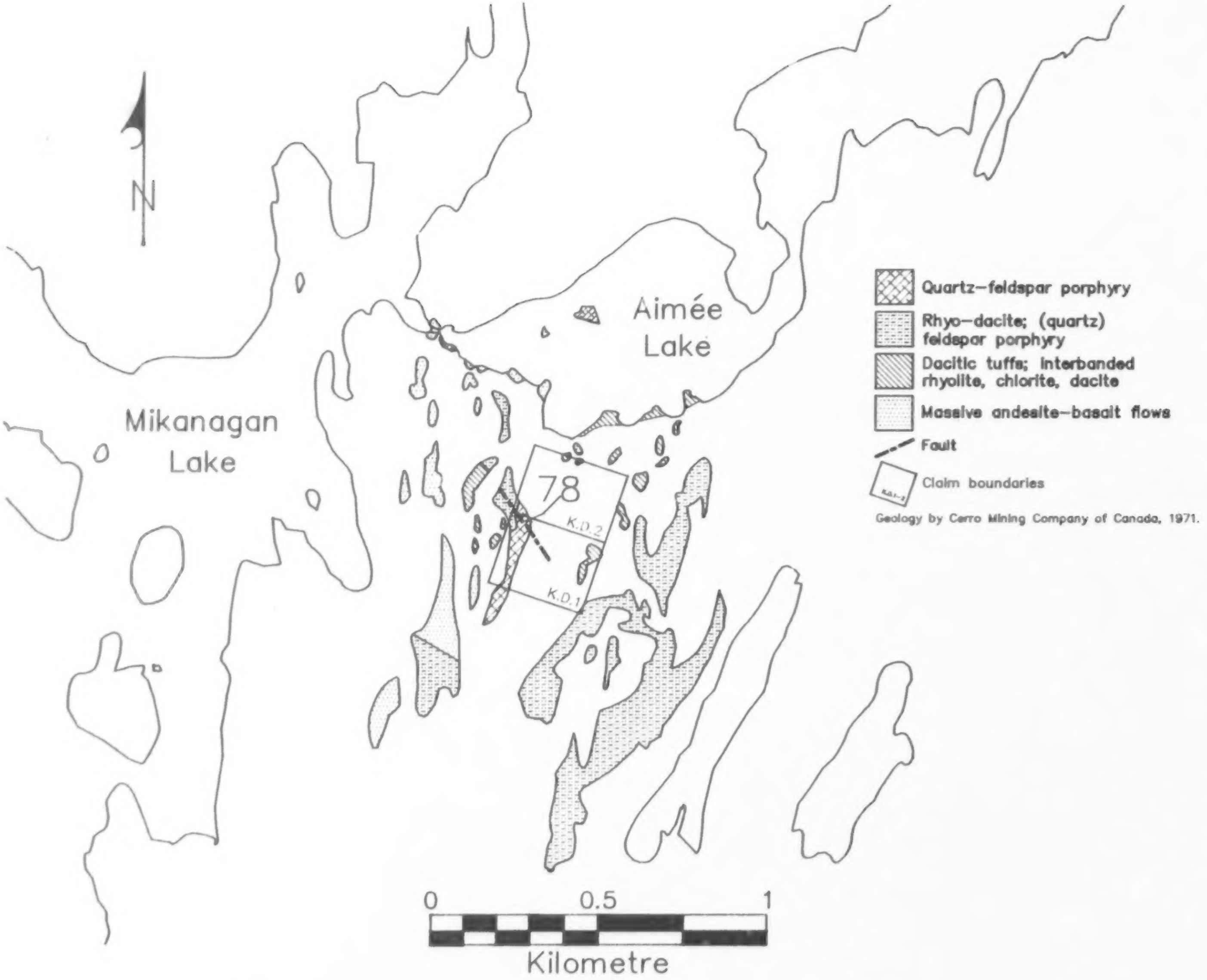
CLASSIFICATION:

Quartz and sulphide veins. This occurrence should be investigated as a potential leakage halo since there are extensive felsic volcanic rocks in the area.

REFERENCES:

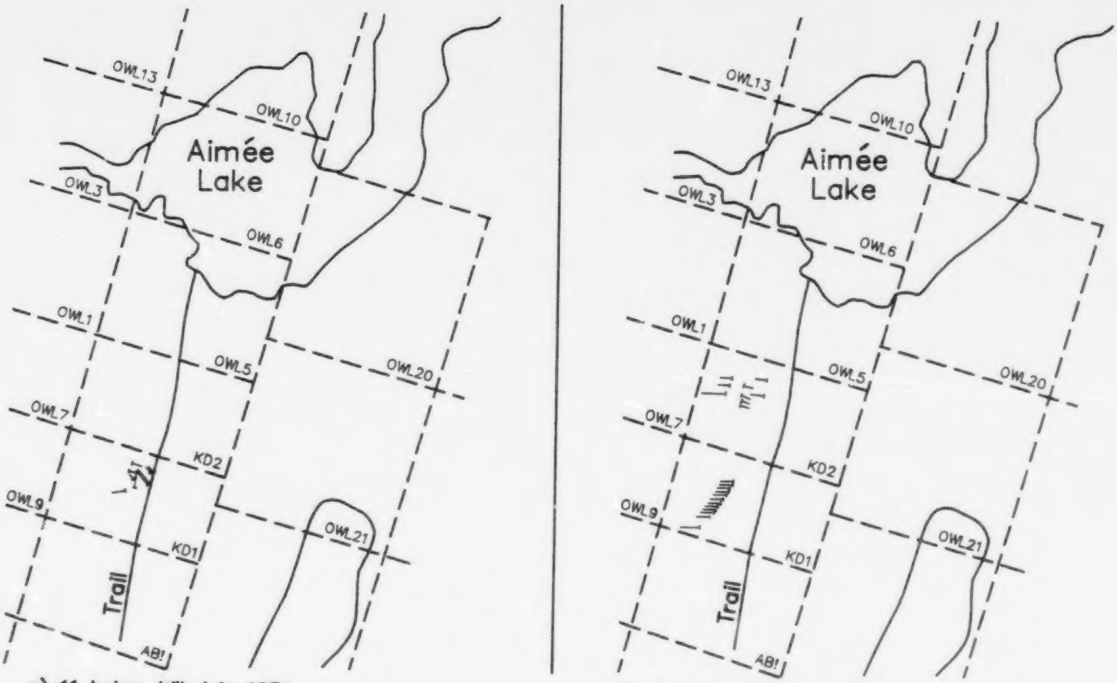
Assessment Files 90417, 90436, 91380, 91944
Manitoba Energy and Mines, Minerals Division.

Mineral Inventory Card 63K/13 Cu11
Manitoba Energy and Mines, Minerals Division.


N
Mikanagan Lake
Aimée Lake
78
K.D.2
K.D.1
▩ Quartz–feldspar porphyry
▦ Rhyo–dacite; (quartz) feldspar porphyry
▨ Dacitic tuffs; interbanded rhyolite, chlorite, dacite
░ Massive andesite–basalt flows
Fault
Claim boundaries
0
0.5
1
Kilometre

Geology by Cerro Mining Company of Canada, 1971.

Figure 78-1: Geological setting of occurrence #78 (63K/13SE).


OWL13
OWL10
Aimée Lake
OWL3
OWL6
OWL1
OWL5
OWL20
OWL7
KD2
OWL9
OWL21
KD1
Trail
AB1

a) 11 holes drilled in 1951

b) 21 holes drilled in 1953

Figure 78-2: Mikanagan Mining Company Limited drill hole locations.

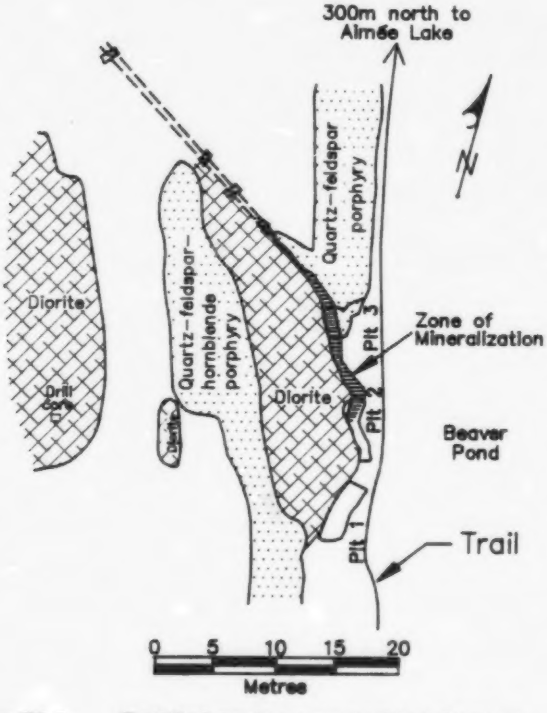

300m north to Aimée Lake
N
Quartz-feldspar porphyry
Diorite
Drill core
Quartz-feldspar-hornblende porphyry
Diorite
Diorite
Pit 3
Pit 2
Pit 1
Zone of Mineralization
Beaver Pond
Trail
0
5
10
15
20
Metres

Figure 78-3: Detailed geology, and pit locations at occurrence #78 (63K/13SE).

LOCATION: 85 NAME:

UTM: 6070695N 328453E AREA: Approximately 400 m west of Mikanagan Lake. AIRPHOTO: A20040-99

ACCESS:

Via Kississing Road, Lac Aimee Road and boat to Mikanagan Lake, west side of small swamp 400 m from lake shore.

EXPLORATION SUMMARY:

Three trenches measuring 1 x 1 x ? m, 1 x 1 x ? m, and 2.5 x 1.5 x 1.5 m were observed. No drill collars or drill core were found in the vicinity. H.B.E.D. completed three holes in 1952/53; the logs are not available.

GEOLOGICAL SETTING:

The area is underlain by very fine grained greenstone with narrow chlorite veins and epidote alteration. The mafic volcanic rocks are cut by intermediate dykes, 1 cm to 1 m thick, that range in composition from diorite to granodiorite.

MINERALIZATION:

Near solid pyrite and pyrrhotite with trace chalcopyrite and magnetite were noted in grey-black chloritic mafic rock. A siliceous diorite contains minor (1-10%) disseminated pyrite.

GEOCHEMICAL DATA:

One sample of choritic rocks with 10% pyrite as blebs and stringers contained 40 ppb Au.

CLASSIFICATION:

Not certain, probably a sulphide vein.

REFERENCES:

Assessment File 90438
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

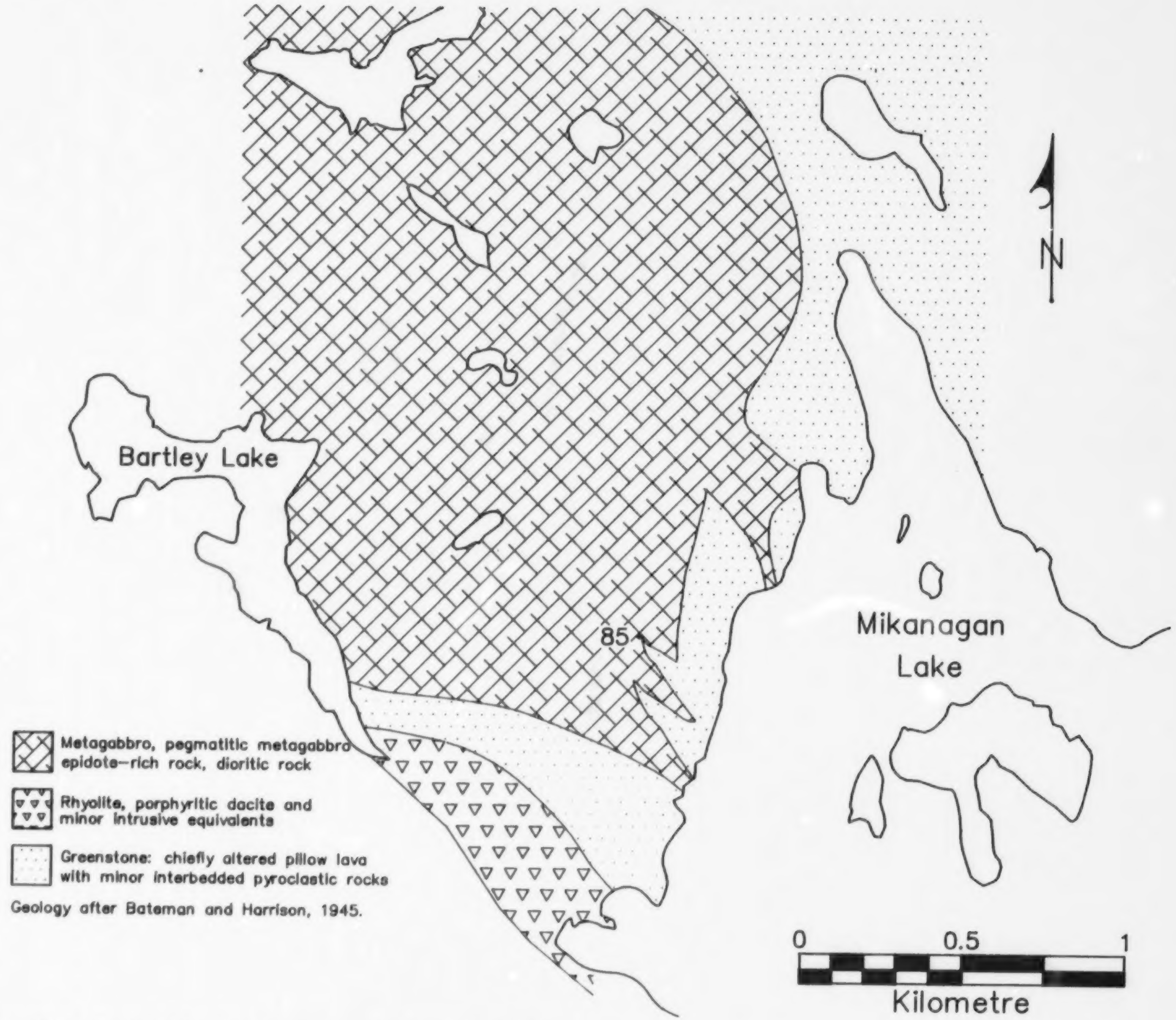

Bartley Lake
Mikanagan Lake
85
N
0
0.5
1
Kilometre
Metagabbro, pegmatitic metagabbro epidote–rich rock, dioritic rock
Rhyolite, porphyritic dacite and minor intrusive equivalents
Greenstone: chiefly altered pillow lava with minor interbedded pyroclastic rocks
Geology after Bateman and Harrison, 1945.

Figure 85-1: Geological setting of occurrence #85 (63K/13SE).

LOCATION: 86 NAME:

UTM: 6075221N 330793E AREA: Bois Lake AIRPHOTO: A26328-170

ACCESS:

Via canoe through Pineroot River, Lac Aimee Road and boat to Mikanagan Lake.

EXPLORATION SUMMARY:

H.B.E.D. drilled eight x-ray holes totalling 364 m on the Aimie claim group in 1948. The property was cancelled in 1953 after a geophysical survey did not outline any conductors. In 1956, Exploration Projects Limited drilled a 142 m hole on the IMA 8 claim. A 122 m hole was drilled on the MIK 18 claim in 1967 by Pineroot Exploration Enterprises. Cerro Mining Co. of Canada drilled a 108 m hole on MIK 17 in 1971.

GEOLOGICAL SETTING:

The area is underlain mainly by aphyric to sparsely porphyritic flows and mafic lapilli tuff/tuff breccia (Fig. 86-1; Bailes and Syme, 1987). In addition, dacitic tuff, rhyolitic porphyry, chlorite and sericite schists were noted in drill logs (Assessment Files 90432 and 90440).

MINERALIZATION:

Near solid to solid pyrite with graphite (3 and 4.5 m thick sections) were intersected in the two drill holes in the middle of the lake; 1 - 10% pyrite was present in several other sections of these cores. A 5.8 m section of very fine grained solid pyrite with graphite was intersected at the south end of the lake.

GEOCHEMICAL DATA:

Assays of 0.3 and 0.8 g/ton Au are reported in Assessment File 90402.

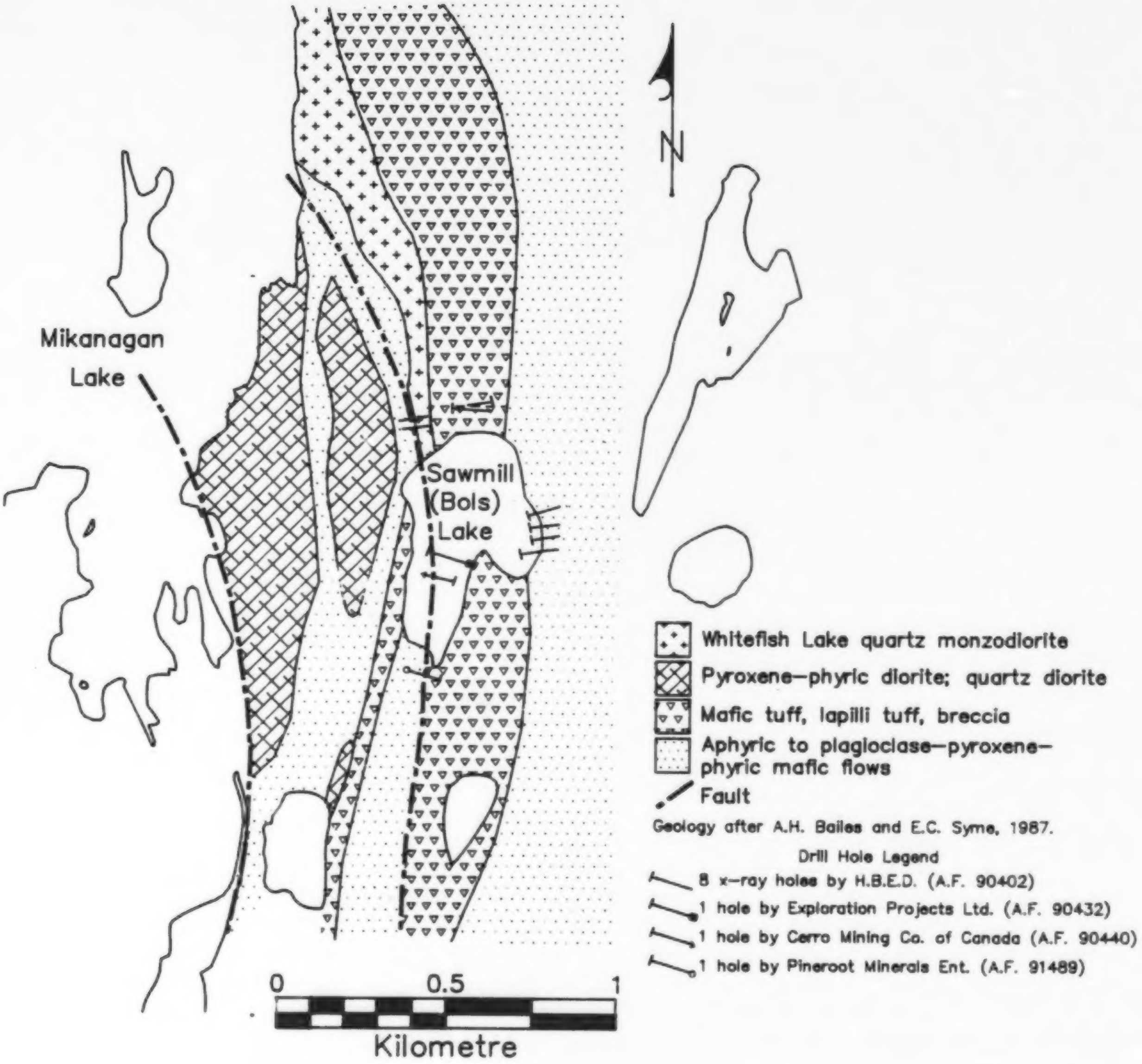
CLASSIFICATION:

Sulphide stratum with graphite.

REFERENCES:

Assessment Files 90401, 90432, 90440, 91489
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR 87-1-1.


N
Mikanagan Lake
Sawmill (Bois) Lake
Whitefish Lake quartz monzodiorite
Pyroxene–phyric diorite; quartz diorite
Mafic tuff, lapilli tuff, breccia
Aphyric to plagioclase–pyroxene–phyric mafic flows
Fault
Drill Hole Legend
8 x–ray holes by H.B.E.D. (A.F. 90402)
1 hole by Exploration Projects Ltd. (A.F. 90432)
1 hole by Cerro Mining Co. of Canada (A.F. 90440)
1 hole by Pineroot Minerals Ent. (A.F. 91489)
0
0.5
1
Kilometre

Geology after A.H. Bailes and E.C. Syme, 1987.

Figure 86-1: Geological setting of occurrence #86 (63K/13SE).

LOCATION: 88 NAME:

UTM: 6074815N 337443E AREA: Southern portion of Alberts Lake. AIRPHOTO: A19638-25

ACCESS:
Via North Star Road, trail to Alberts Lake.

EXPLORATION SUMMARY:
Archie Talbot completed a pit (2.5 x 5 x 3.5 m) on the STAR 3 claim and a drill hole (113 m) on STAR 2 claim in 1954. (Both locations are uncertain.)

GEOLOGICAL SETTING:
A narrow lens of intermediate volcanic rocks is in fault contact with a dioritic/gabbroic intrusion.

MINERALIZATION:
Seven feet of "well mineralized" rock, trace chalcopyrite.

GEOCHEMICAL DATA:
None.

CLASSIFICATION:
Uncertain.

REFERENCES:

Assessment File 90433
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

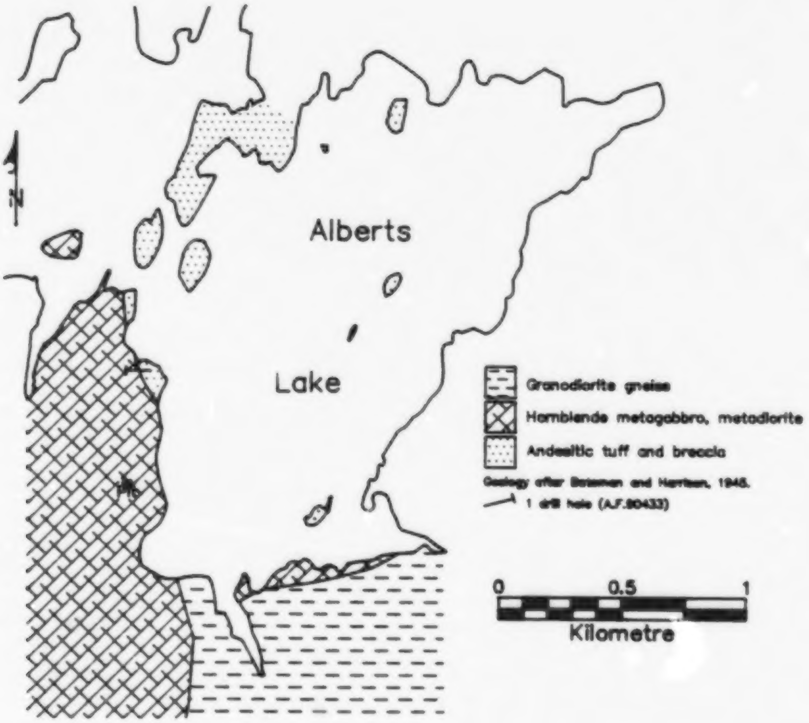

N
Alberts
Lake
Granodiorite gneiss
Hornblende metagabbro, metadiorite
Andesitic tuff and breccia
Geology after Bateman and Harrison, 1945.
1 drill hole (A.F.90433)
0
0.5
1
Kilometre

Figure 88-1: Geological setting of occurrence #88 (63K/13SE)

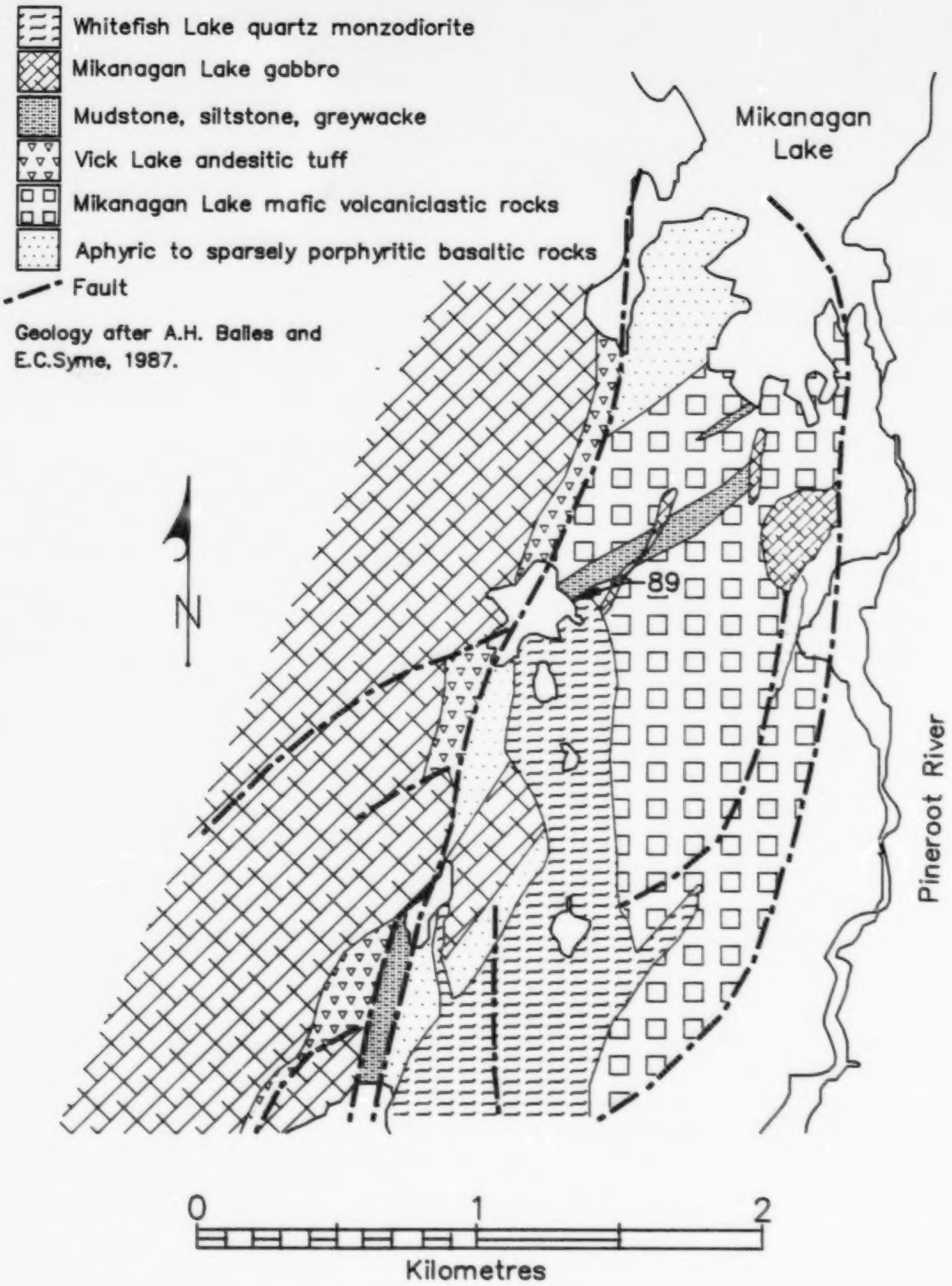

Whitefish Lake quartz monzodiorite
Mikanagan Lake gabbro
Mudstone, siltstone, greywacke
Vick Lake andesitic tuff
Mikanagan Lake mafic volcaniclastic rocks
Aphyric to sparsely porphyritic basaltic rocks
Fault
Geology after A.H. Bailes and E.C.Syme, 1987.
Mikanagan Lake
N
89
Pineroot River
0
1
2
Kilometres

Figure 89-1: Geological setting of occurrence #89 (63K/13SE).

LOCATION: 89 NAME:

UTM: 6073949N 329184E AREA: East side of small lake at extreme north end of Whitefish Lake pluton. AIRPHOTO: A26328-202

ACCESS:

Via North Star Road and canoe up Pineroot River.

EXPLORATION SUMMARY:

Two trenches (1 x 0.3 x 0.15 m and 1.5 x 0.35 x 0.3 m) were noted by V. Colcleugh in 1952.

GEOLOGICAL SETTING:

The area is underlain by andesitic volcanic rocks and a mudstone (Fig. 89-1 - Bailes and Syme, 1987) that have been intruded by the Whitefish Lake quartz monzodiorite (Baldwin, 1980, and Bailes and Syme, 1987).

MINERALIZATION:

Disseminated pyrite was recorded as a 15 m wide rim around the main intrusive mass. Minor chalcopyrite (up to 1% Cu in selected grab samples) occurs at several places. The mineralization extends into the intrusion and quartz veins with minor chalcopyrite occur at two places along the valley. This occurrence represents part of the copper-molybdenum anomaly located by Baldwin (1980) at the north end of the chalcopyrite-molydenite-bearing Whitefish Lake pluton. The valley may represent the northern extension of a shear zone similar to that observed at Locality 8.

GEOCHEMICAL DATA:

Baldwin (1980) outlined a molybdenum anomaly of 75 ppm and a copper anomaly of 1000 ppm during regional sampling of the pluton (see Fig. 8-3; 63K/13SE #8).

CLASSIFICATION:

Vein system (porphyry type?) associated with, and possibly mobilizate derived from, the pluton.

REFERENCES:

Assessment Files 90446, 90449
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake Area; Manitoba Energy and Mines, Geological Services, Geological Map GR 87-1-1.

Baldwin, D.A.
1980: Porphyritic intrusive and related mineralization in the Flin Flon volcanic belt; Manitoba Energy and Mines, Mineral Resources Division, Economic Geology Report ER 79-4.

LOCATION: 98

NAME:

UTM: 6072548N 335794E

AREA: Approximately 1.7 km north of Bryan Lake and 1.2 km south of Leo Lake

AIRPHOTO: A26398-64

ACCESS:

Via North Star Road and boat on Thompson Lake. Location uncertain; probably located in or near swamp in the centre of claim.

EXPLORATION SUMMARY:

Pineroot Mineral Enterprises completed a 136.5 m drill hole in 1970.

GEOLOGICAL SETTING:

The area is underlain mainly by andesitic volcanic rocks (Bateman and Harrison, 1945).

MINERALIZATION:

Trace to minor pyrite and chalcopyrite are disseminated throughout the andesitic volcanic rock.

GEOCHEMICAL DATA:

None

CLASSIFICATION:

Uncertain. Disseminated sulphide in andesitic volcanic rock.

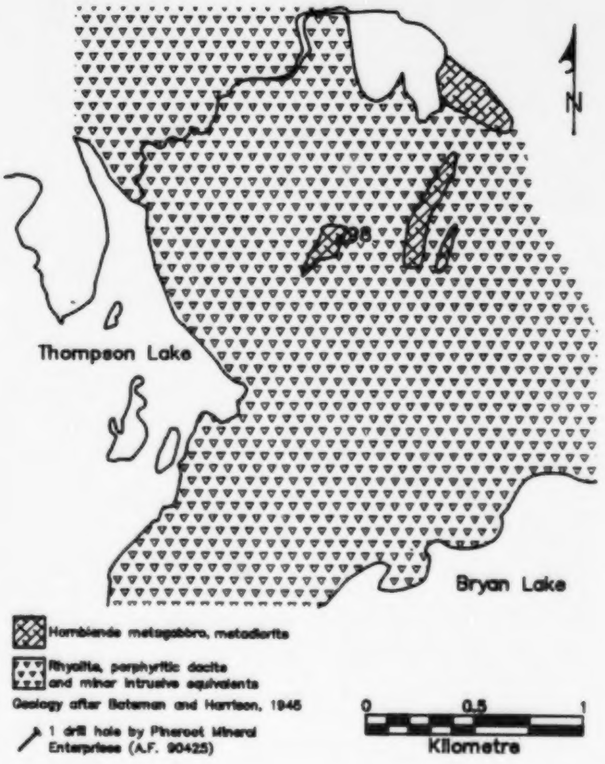
REFERENCES:

Assessment File 90425

Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.

1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.


N
98
Thompson Lake
Bryan Lake
▨ Hornblende metagabbro, metadiorite
▽ Rhyolite, porphyritic dacite and minor intrusive equivalents
1 drill hole by Pineroot Mineral Enterprises (A.F. 90425)
0
0.5
1
Kilometre

Geology after Bateman and Harrison, 1945

Figure 98-1: Geological setting of occurrence #98 (63K/13SE).

LOCATION: 99 NAME:

UTM: 6075969N 329686E AREA: Southwest of Mikanagan Lake. AIRPHOTO: A26328-204

ACCESS:

Via North Star Road and canoe up Pineroot River.

EXPLORATION SURVEY:

Patino Management Services Limited conducted a geophysical survey on the Ed group in 1959. Two drill holes totalling 246.5 m tested the anomalies detected. Other work in this area included a 47 m diamond drill hole on the Pin claim (P1) in 1950 and a 28 m drill hole (J1) on the Joe group in 1962.

GEOLOGICAL SETTING:

The drill holes were located in intermediate to mafic flows and fragmental rocks and associated sedimentary rocks that lie adjacent to a large gabbroic body (Fig. 99-1).

MINERALIZATION:

Minor (1-6%) pyrite occurs in sheared rhyolite and trachyte with considerable quartz veining and quartz-carbonate veins. The pyrite, in the form of disseminated cubes, stringers and lenses, also occurs along shear planes in quartz-sericite schist and abundant quartz-carbonate stringers in altered greenstone (Hole P1, Assessment File 90402). Minor pyrite was noted in a feldspar porphyry and a barren quartz vein (Assessment File 90446), and minor pyrite, pyrrhotite and trace chalcopyrite were found in DDH J-1 (Assessment File 90434).

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Veins. Shear zones(?).

REFERENCES:

Assessment Files 90420, 90434, 90446
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake Area; Manitoba Energy and Mines, Geological Services Branch, Geological Map GR87-1-1.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake Map Area, Manitoba; Geological Survey of Canada, Paper 44-22.

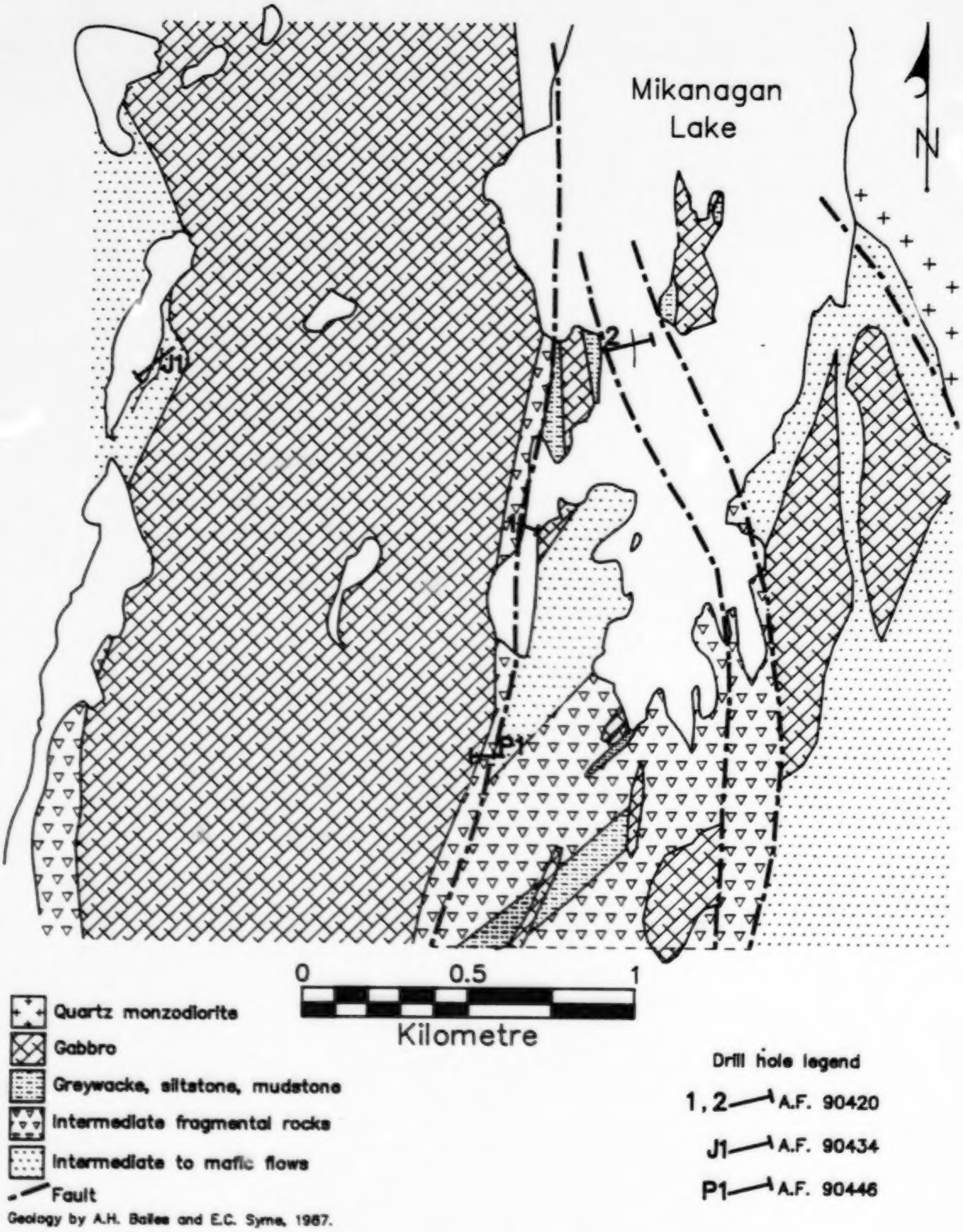

Mikanagan Lake
N
2
J1
1
P1
0
0.5
1
Kilometre
Quartz monzodiorite
Gabbro
Greywacke, siltstone, mudstone
Intermediate fragmental rocks
Intermediate to mafic flows
Fault
Geology by A.H. Bailes and E.C. Syme, 1987.
Drill hole legend
1, 2 A.F. 90420
J1 A.F. 90434
P1 A.F. 90446

Figure 99-1: Geological setting of occurrence #99 (63K/13SE).

LOCATION: 100 NAME:

UTM: 6082942N 339322E AREA: East end of Lac Aimee AIRPHOTO: A19636-19

ACCESS:

Via Kississing Road and Lac Aimee Road.

EXPLORATION SURVEY:

Two drill holes were drilled on the M5 claim in 1972.

GEOLOGICAL SETTING:

The occurrence is in a zone of shearing and faulting in felsic to mafic volcanic rocks altered to chloritic schists. Minor quartz porphyry and sericitic schists are also present.

MINERALIZATION:

Disseminated pyrite (1-5%) occurs throughout the chloritic schists and quartz porphyry. Quartz veining is common and ankerite is present locally.

GEOCHEMICAL DATA:

None.

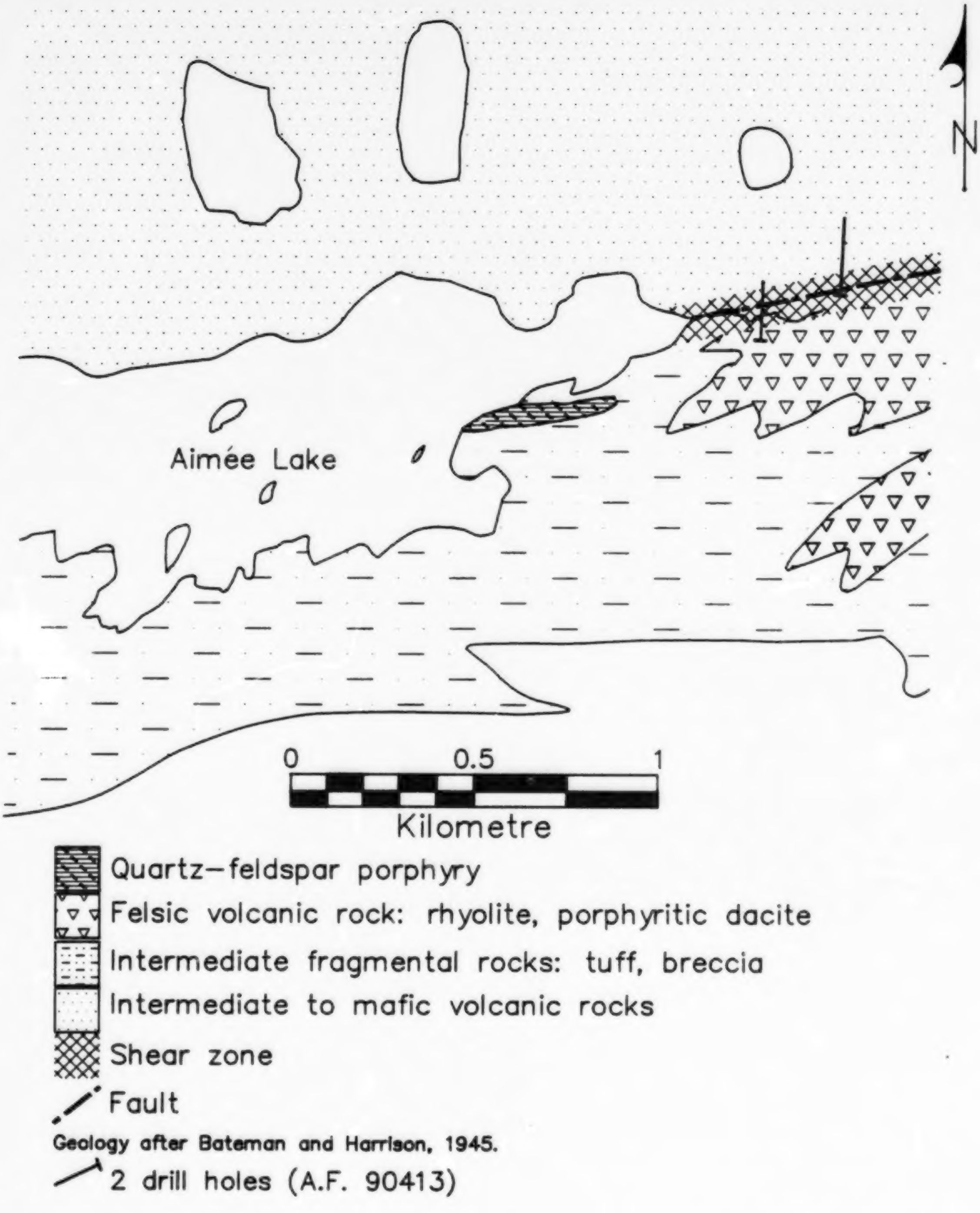
CLASSIFICATION:

Veins of quartz and pyrite in sheared and faulted volcanic rocks.

REFERENCES:

Assessment File 90413
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, one inch to one mile; Geological Survey of Canada, Ottawa.


Aimée Lake
0
0.5
1
Kilometre
N
Quartz–feldspar porphyry
Felsic volcanic rock: rhyolite, porphyritic dacite
Intermediate fragmental rocks: tuff, breccia
Intermediate to mafic volcanic rocks
Shear zone
Fault
2 drill holes (A.F. 90413)

Geology after Bateman and Harrison, 1945.

Figure 100-1: Geological setting of occurrence #100 (63K/13SE).

LOCATION: 101

NAME:

UTM: 6078636N 333945E

AREA: West side of Moose (Long) Lake. 4.6 km north of Flintoba Lake

AIRPHOTOS: A26328-22, 23

ACCESS:

Via Kississing Lake road, Lac Aimee Road and boat on Lac Aimee.

EXPLORATION SUMMARY:

Two holes were drilled in 1955 on the AL6 claim to test an E.M. anomaly by Cyprus Exploration Corporation, Limited on the AL 6 claim in 1955.

GEOLOGICAL SETTING:

The drill holes were collared in an area of medium to dark green, massive, recrystallized intermediate volcanic flows, minor dacite and intermediate tuff.

MINERALIZATION:

Minor (1-10%) sulphides were intersected in both drill cores. Hole No. 4 reported 45 cm pyrrhotite, pyrite and chalcopyrite in sheared greenstone with calcite bands up to 5 cm thick. Hole No. 5 intersected minor pyrrhotite and chalcopyrite in a grey, fine grained tuff.

GEOCHEMICAL DATA:

None

CLASSIFICATION:

Veins and disseminations of sulphide in sheared greenstone.

REFERENCES:

Assessment File 90442
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

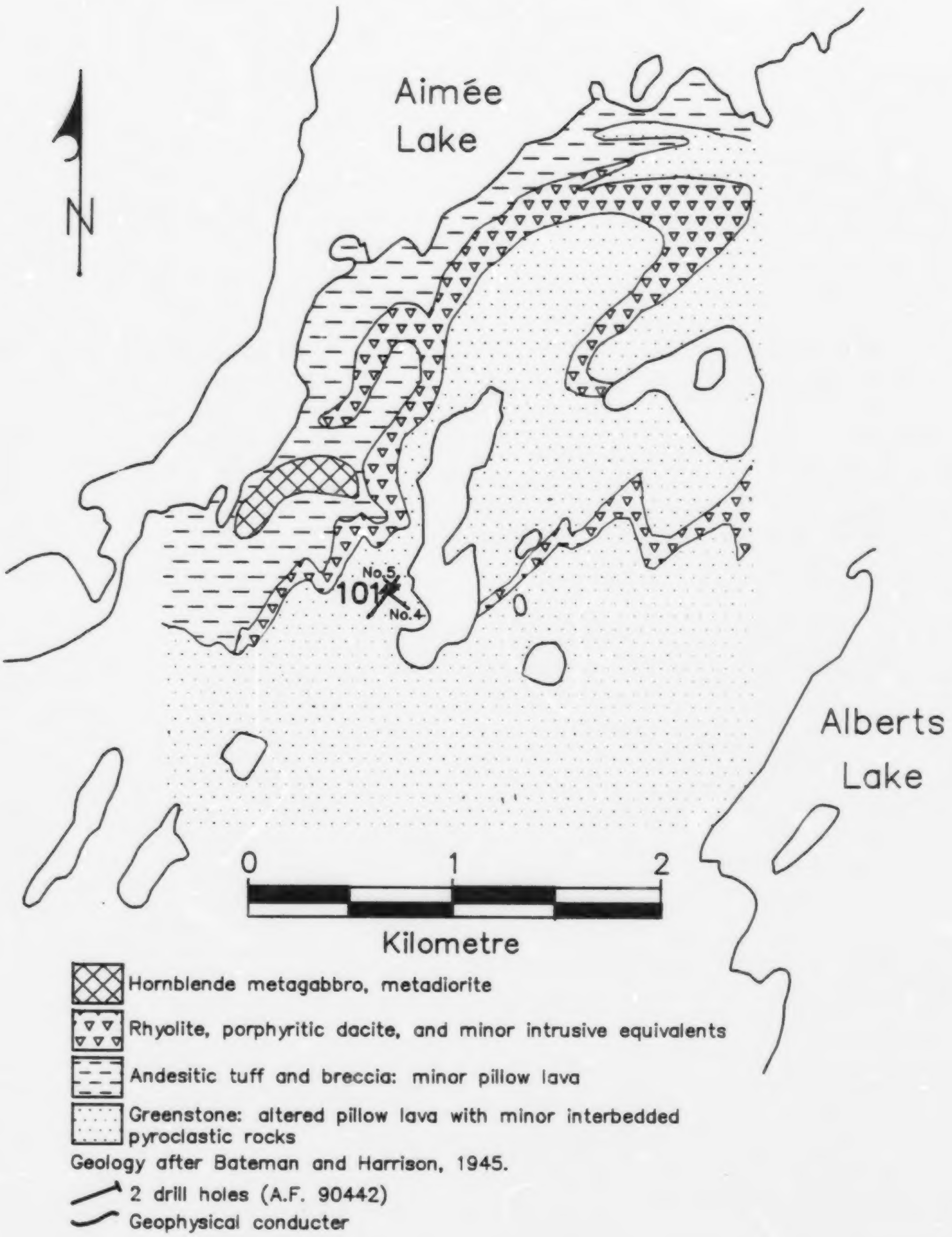

N
Aimée Lake
Alberts Lake
101
No.5
No.4
0
1
2
Kilometre
Hornblende metagabbro, metadiorite
Rhyolite, porphyritic dacite, and minor intrusive equivalents
Andesitic tuff and breccia: minor pillow lava
Greenstone: altered pillow lava with minor interbedded pyroclastic rocks
Geology after Bateman and Harrison, 1945.
2 drill holes (A.F. 90442)
Geophysical conducter

Figure 101-1: Geological setting of occurrence #101 (63K/13SE).

LOCATION: 102 NAME:

UTM: 6080782N 329774E AREA: Swordfish Lake AIRPHOTO: A26328-167

ACCESS:

Via Kississing Lake Road, Lac Aimee Road and boat to Mikanagan Lake.

EXPLORATION SUMMARY:

The Barby group of claims optioned by H.B.E.D. in 1953. Two were holes drilled on E.M. conductors.

GEOLOGICAL SETTING:

The conductors occur close to the contacts between argillite and bedded tuff and intermediate to mafic volcanic rocks. Rocks of the Tartan Lake mafic intrusive complex intrude the argillite (Fig. 102-1).

MINERALIZATION:

The drill cores were reported to contain mainly sheared andesite with minor pyrite. A number of sections contained quartz and carbonate and were "well mineralized" with pyrrhotite, pyrite and chalcopyrite (Assessment File 90438).

GEOCHEMICAL DATA:

None

CLASSIFICATION:

Veins of quartz and carbonate with minor sulphide, probably a zone of shearing.

REFERENCES:

Assessment File 90438
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

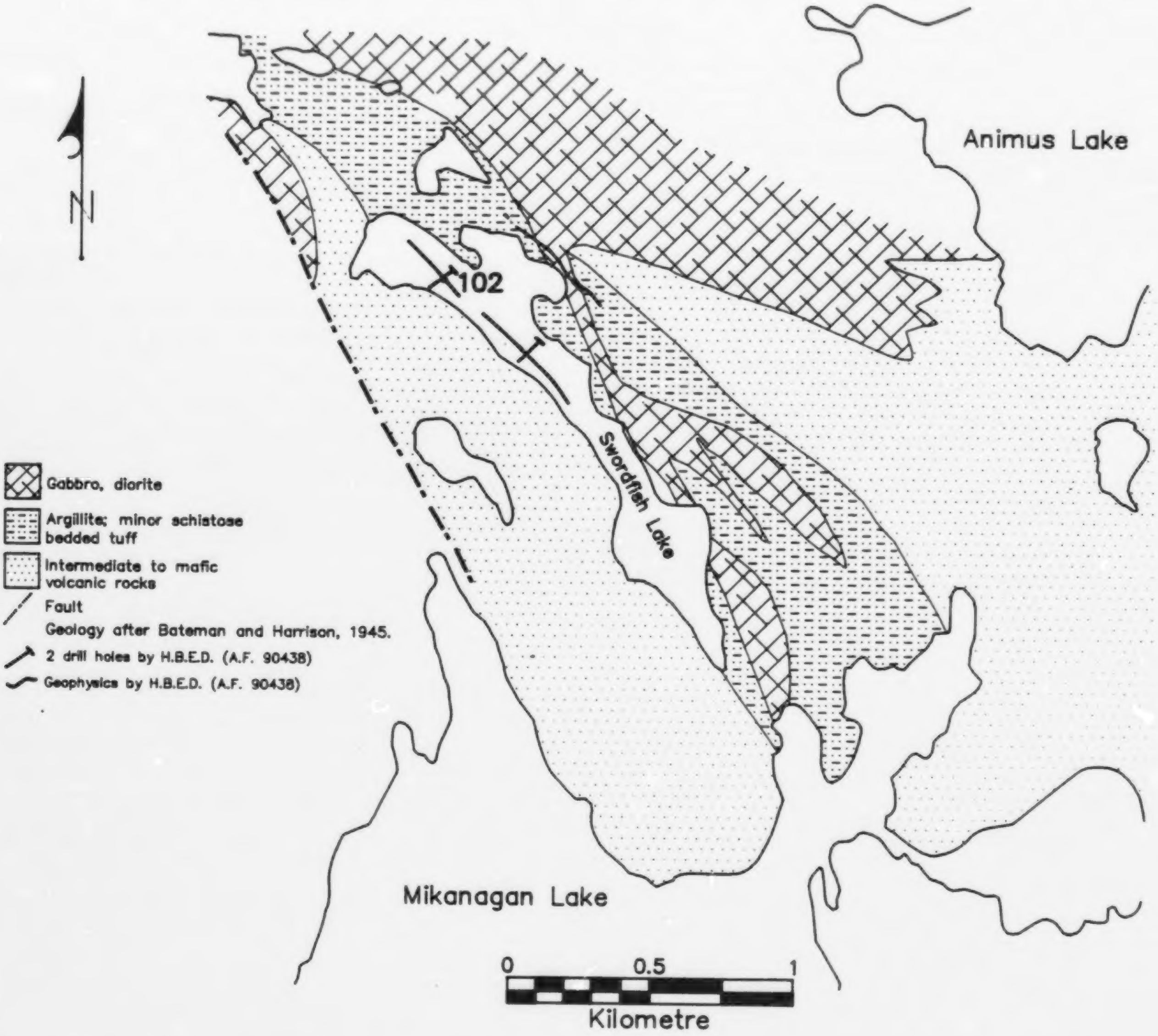

Animus Lake
102
Swordfish Lake
Mikanagan Lake
N
Gabbro, diorite
Argillite; minor schistose bedded tuff
Intermediate to mafic volcanic rocks
Fault
Geology after Bateman and Harrison, 1945.
2 drill holes by H.B.E.D. (A.F. 90438)
Geophysics by H.B.E.D. (A.F. 90438)
0
0.5
1
Kilometre

Figure 102-1: Geological setting of occurrence #102 (63K/13SE).

LOCATION: 103 NAME: TARTAN LAKE MINE

UTM: 6081901N 324608E AREA: Tartan Lake. AIRPHOTO: A26397-157

ACCESS:

Via road to Tartan Lake Mine.

EXPLORATION SUMMARY:

Exploration of the area around Tartan Lake commenced prior to 1930 (Bateman, 1945) when trenches and pits were put down on the Monica and Killarney claims (cf. occurrence 63K/13SE #34). Trenches were cut into a zone of alteration and shearing approximately midway between occurrence 34 and the Tartan Lake Mine main zone, probably in the late 1930s. The ore zones of the Tartan Lake mine were discovered beneath a muskeg swamp during drill testing of a VLF anomaly in 1984.

GEOLOGICAL SETTING:

The Tartan Lake Mine main zone occurs in quartz-chlorite schists between a gabbroic mass and volcanogenic sedimentary rocks and andesitic lavas. A major zone of faulting and/or shearing occurs along this contact. The general geology of the area is described by Peloquin et al. (1986) and Gale and Ferreira (1987). The south zone of this mine occurs entirely within the gabbroic complex and is similar to other mineralized and altered zones in the area (cf. 63K/13SE #34). The only description of the main ore zone currently available is that shown in Figure 103-2.

MINERALIZATION:

Gold occurs mainly in the free state in association with sulphide minerals (1 - 10% pyrite ± chalcopyrite) in a zone of silicification and in quartz veins cutting schistose and mylonitized rocks consisting of chloritic and sericitic schists. Many of the quartz veins with visible gold are fracture fillings of quartz (+ gold) mobilizate that are much later than the initial period of mineralization.

GEOCHEMICAL DATA:

Ore reserves are reported to be 582 000 tonnes of 10.23 g/tonne (E. Fluskey, pers. comm., 1987).

CLASSIFICATION:

Gold- and sulphide-bearing zones of silicification at the contact between massive gabbro and schistose volcanic rocks. Quartz and sulphide veins cutting across the schistose zones are related to later shearing, faulting and element mobilization.

REFERENCES:

Bateman, J.D.
1945: Gold deposits east of Flin Flon; Geological Survey of Canada, Paper 45-12.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A; one inch to one mile; Geological Survey of Canada, Ottawa.

Fluskey, E.
1987: District Manager, Granges Exploration Ltd., various personal and written communications.

Gale, G.H. and Ferreira, K.
1987: Geological Setting of the Tartan Lake Mine; Manitoba Energy and Mines, Geological Services, Open File Report 87-8.

Peloquin, S. and Gale, G.H.
1985: Geological Setting of the Tartan Lake gold deposit; Manitoba Energy and Mines, Mineral Resources Division, Report of Field Activities, 1985. p. 71-73.

Peloquin, S., Tannahill, B., and Gale, G.H.
1986: Geology of the Tartan Lake gold deposits; Manitoba Energy and Mines, Geological Services, Report of Field Activities, 1986, p. 56-64.

Wright, J.F. and Stockwell, C.H.
1934: Gold occurrences of the Flin Flon District; Geological Survey of Canada, Summary Report 1933, Pt. C, p. 8-10.

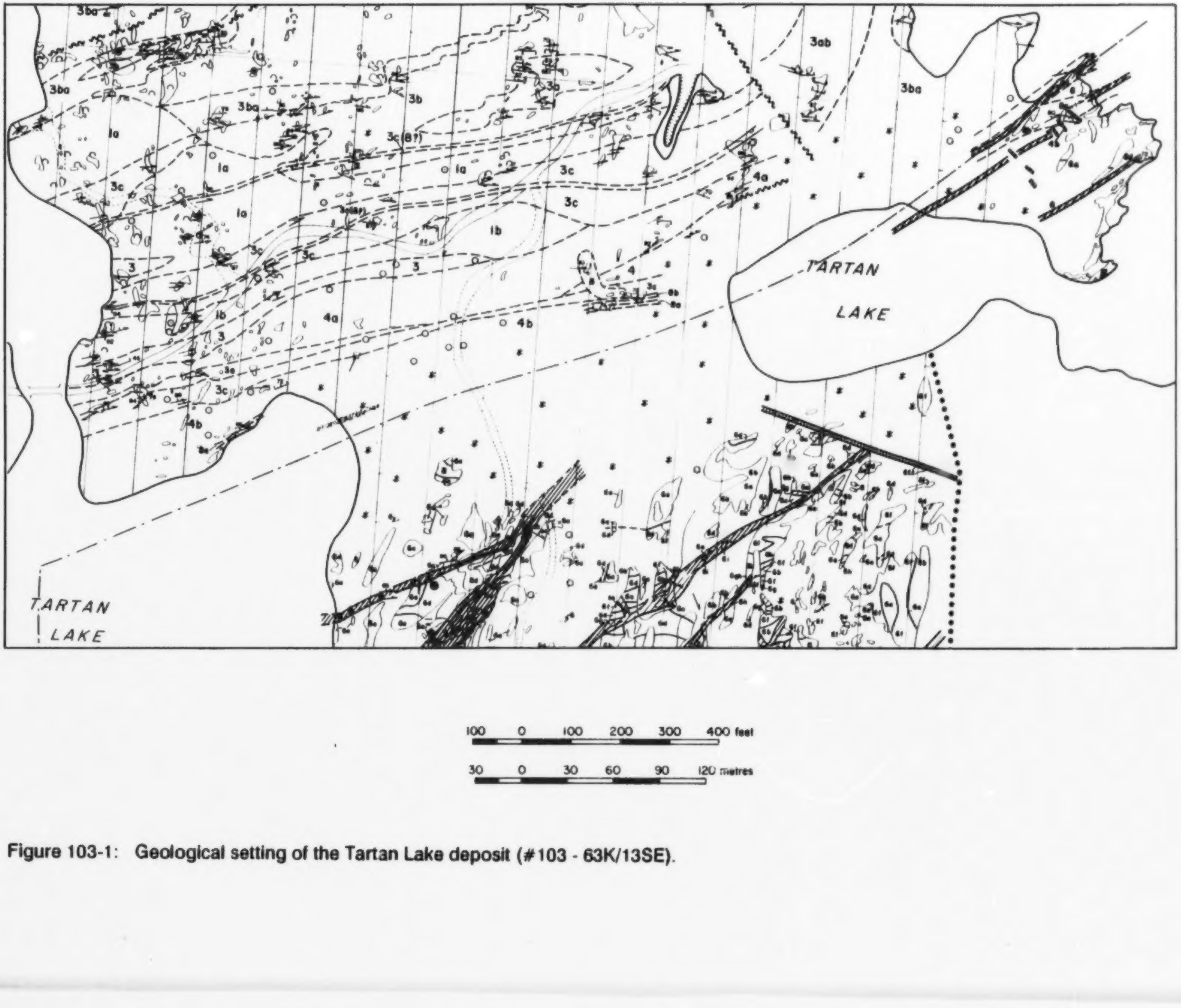

3ba
3ab
3b
1a
1b
3c
3c(8?)
3
4
4a
4b
TARTAN
LAKE
TARTAN
LAKE
100 0 100 200 300 400 feet
30 0 30 60 90 120 metres

Figure 103-1: Geological setting of the Tartan Lake deposit (#103 - 63K/13SE).

LEGEND

8 FELDSPAR-QUARTZ PORPHYRY, SILLS, DYKES

- a) coarse grained
- b) fine grained

7 RUBY LAKE GABBRO/DIORITE, SILLS, DYKES

6 GABBROIC COMPLEX

- a) gabbro, medium grained
- b) gabbro, medium grained, with fine grained diorite dykes
- c) gabbro, medium grained, with aphanitic intermediate dykes
- d) diorite, fine grained
- e) diorite, aphanitic
- f) igneous breccia: medium grained gabbroic clasts in a fine grained dioritic matrix
- g) altered gabbro, non- to weakly schistose, pale green, chloritic
- h) altered gabbro, non- to weakly schistose, chlorite - carbonate
- i) altered gabbro, schistose, chlorite - carbonate - quartz ± fuchsite ± tourmaline ± sericite

5 'KNOTTED' GABBRO

- a) hornblende-plagioclase, poikiloblastic
- b) microphyric

4 CHLORITIZED MAFIC ROCKS

- a) mafic volcanic rock (tuffaceous?)
- b) schistose

3 FELSIC TO INTERMEDIATE VOLCANICLASTIC ROCKS

- a) felsic tuffaceous rock
- b) intermediate tuffaceous rock
- c) intermediate volcaniclastic rock

2 MAFIC VOLCANICLASTIC AND SEDIMENTARY ROCKS

- a) mafic volcanic - derived wacke
- b) mafic siltstone

1 ANDESITIC VOLCANIC ROCKS

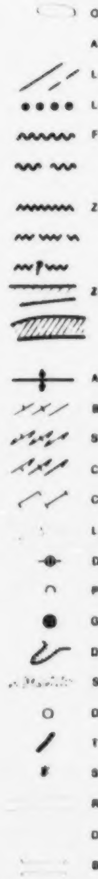
- a) aphyric flow
- b) pyroxene - phyric flow
- c) fragmental

To accompany Open File Report OFR87-8

Geology by S. Paloquin, B. Tannahill, and G. Gale, 1985-86

NTS 63K/13SE

SYMBOLS



Outcrop
Area of shallow overburden
Lithological contact, known, assumed
Limit of geological mapping at 1:1200 scale
Fault, known
, approximate
Zone of chloritization and shearing, known
, approximate
, assumed
Zone of alteration, 6g
, 6h - 6i
Antiform, assumed axial trace
Bedding, inclined, vertical, dip unknown
Schistosity, inclined, vertical, dip unknown
Cleavage, regional, inclined, vertical, dip unknown
Cleavage, axial, (kink folds), inclined, vertical
Layering
Deformed pillows
Pillowed flow, tops unknown
Gold occurrence
Decline, Tartan Lake gold deposit
Surface projection of the Main Zone, Tartan Lake gold deposit
Diamond drill hole
Trench
Swamp
Road, all weather
Drill road
Bridge

The grid that was used for reference in this mapping was cut in 1985 by Granges Exploration Ltd

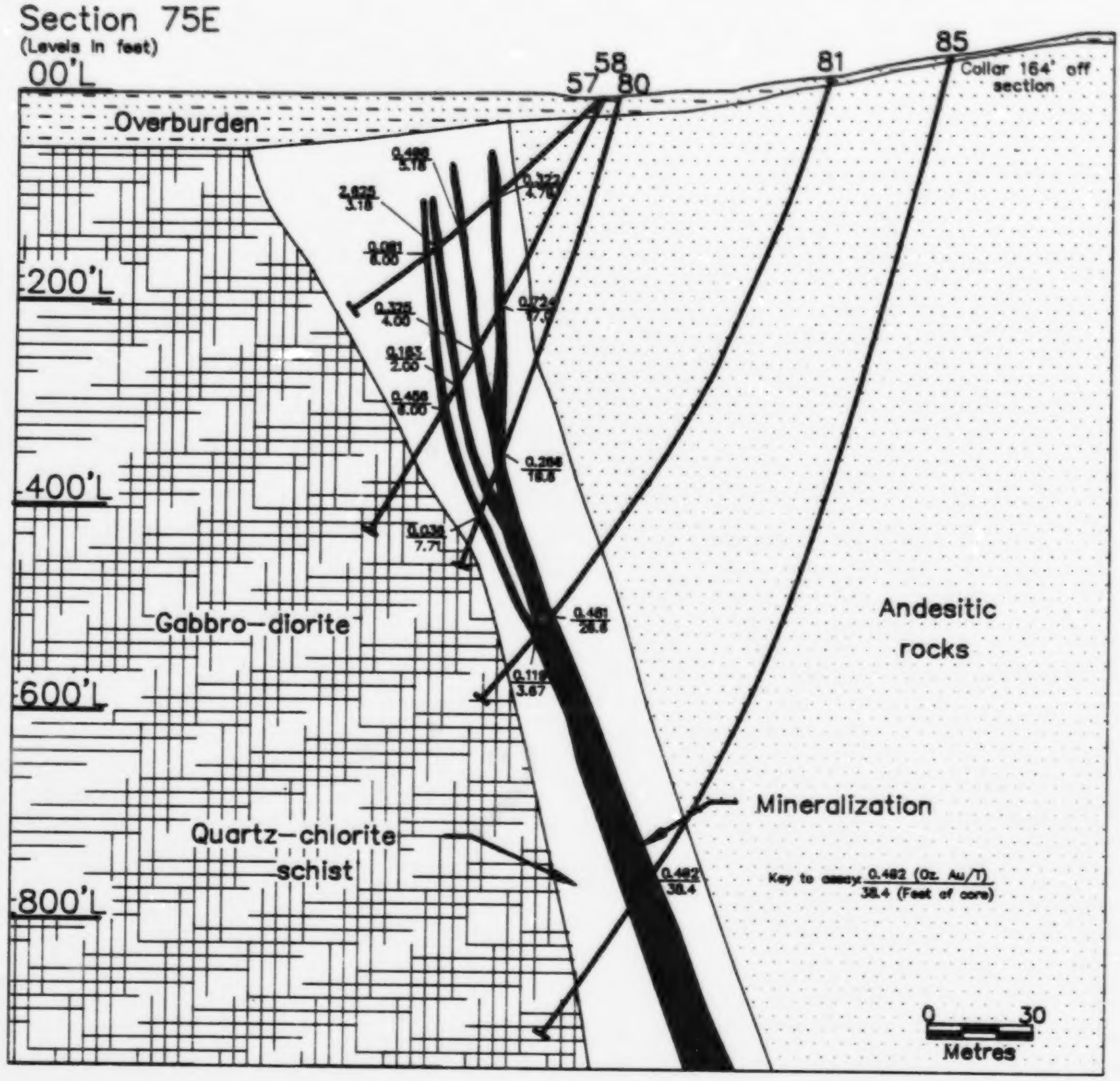

Section 75E
(Levels in feet)
00'L
200'L
400'L
600'L
800'L
58
57
80
81
85
Collar 164' off section
Overburden
0.488
5.18
2.825
3.18
0.081
6.00
0.322
4.76
0.325
4.00
0.724
17.3
0.183
2.00
0.456
8.00
0.288
18.8
0.030
7.71
0.461
28.8
0.119
3.67
0.482
38.4
Gabbro—diorite
Andesitic rocks
Mineralization
Quartz—chlorite schist
Key to assay: 0.482 (Oz. Au/T) / 38.4 (Feet of core)
0
30
Metres

Figure 103-2: Cross-section of the Tartan Lake Gold Deposit. Coutesy of Granges Exploration, 1987.

LOCATION: 104 NAME:

UTM: 6077999N 323729E AREA: Approximately 4.8 km west of Mikanagan Lake and 3.6 km south of Ruby Lake. AIRPHOTO: A26397-152

ACCESS:

Via boat on Manistikwan Lake.

EXPLORATION SUMMARY:

H.B.E.D. completed a geophysical survey (HLEM) and drilled an 86 m hole to test a conductor on Lit 168 in 1953.

GEOLOGICAL SETTING:

The area is underlain mainly by mafic to intermediate volcanic rocks that have been intruded by gabbroic and dioritic intrusions. In addition, chert breccia, rhyolite, dacite and graphite schists were noted in drill core.

MINERALIZATION:

Intersections of near solid pyrite (3.6 m and 4.5 m thick) with minor chalcopyrite and sphalerite and some near solid pyrrhotite layers were found throughout the drill cores in association with graphitic schists. Graphite schist, cherty graphite, breccia, silicified dacite, and rhyolite are associated with disseminated pyrite, pyrrhotite and chalcopyrite.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Sulphide strata.

REFERENCES:

Assessment File 90438
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A; one inch to one mile; Geological Survey of Canada, Ottawa.

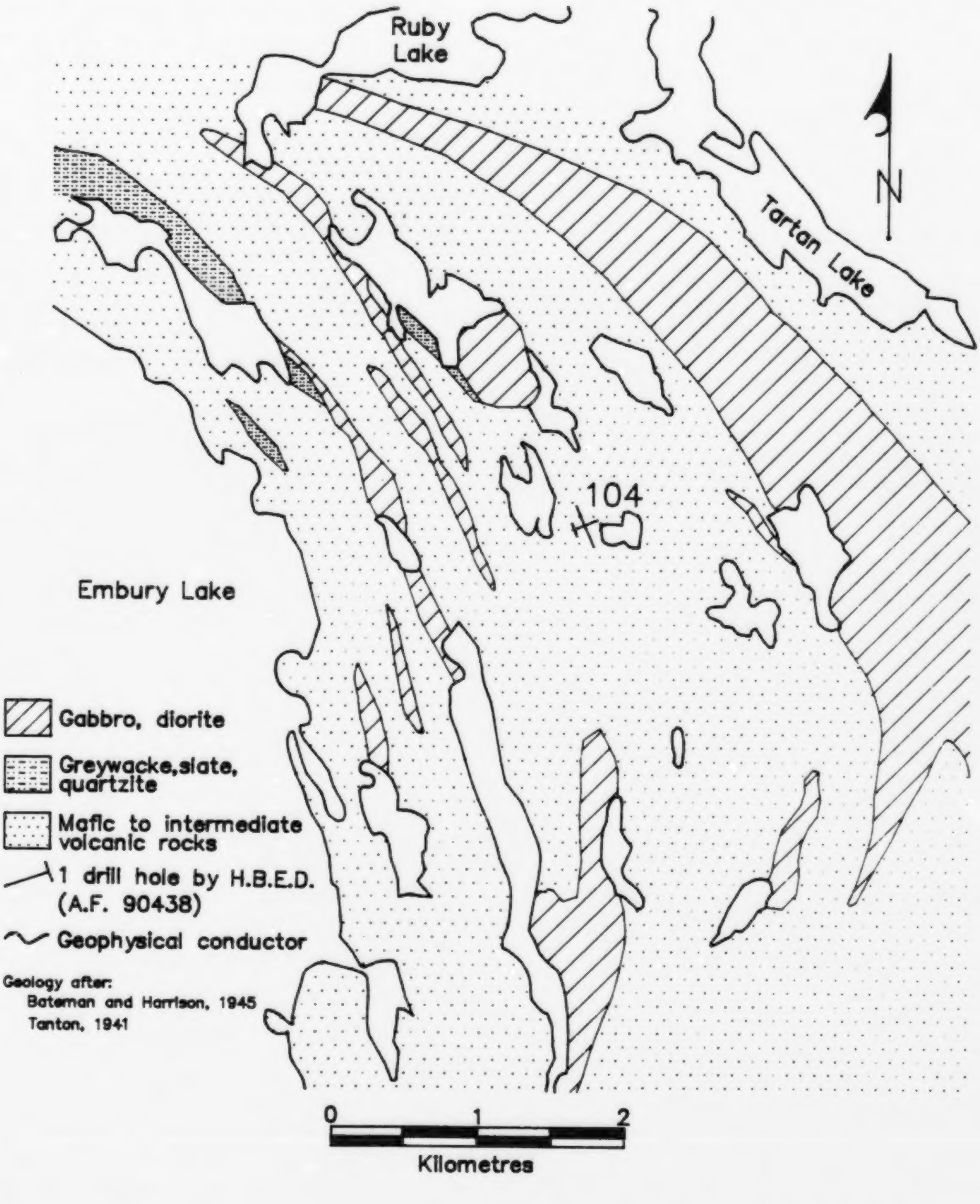

Ruby Lake
Tartan Lake
N
104
Embury Lake
Gabbro, diorite
Greywacke, slate, quartzite
Mafic to intermediate volcanic rocks
1 drill hole by H.B.E.D. (A.F. 90438)
Geophysical conductor
Geology after:
Bateman and Harrison, 1945
Tanton, 1941
0
1
2
Kilometres

Figure 104-1: Geological setting of occurrence #104 (63K/13SE).

LOCATION: 105 NAME:

UTM: 6075810N 323917E

AREA: Small lake approximately 550 m east of the northeast arm of Manistikwan Lake

AIRPHOTO: A26397-153

ACCESS:

Via boat on Manistikwan Lake.

EXPLORATION SUMMARY:

H.B.E.D. completed a geophysical survey on the Lit claims in 1953. Two holes were drilled through a conductor on Lit 37.

GEOLOGICAL SETTING:

A geophysical conductor parallels a fault zone along the contact between volcanic rocks and a mafic intrusion (Fig. 105-1).

MINERALIZATION:

Minor (1-10%) sulphides (pyrite, pyrrhotite, chalcopyrite) occur throughout chloritic and graphitic schists and sheared diorite. Carbonate veining and silicification are locally present in the diorite.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Veins and disseminations of sulphide in sheared diorite.

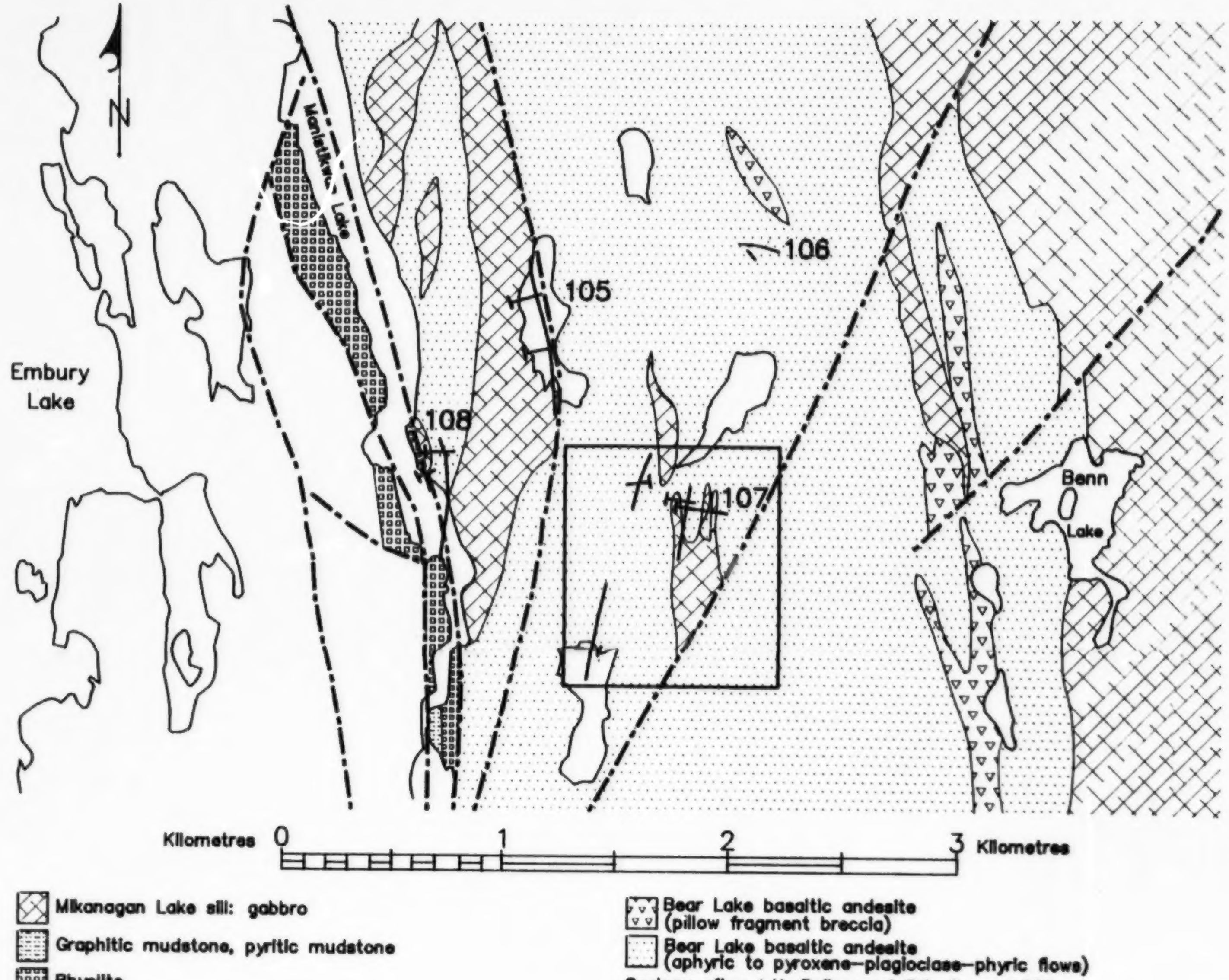
REFERENCES:

Assessment File 90438

Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.

1987: Geology of the Flin Flon-White Lake Area. Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.


Embury Lake
N
Manistikwan Lake
108
105
106
107
Benn Lake
Kilometres 0 1 2 3 Kilometres
Mikanagan Lake sill: gabbro
Graphitic mudstone, pyritic mudstone
Rhyolite
Bear Lake basaltic andesite (pillow fragment breccia)
Bear Lake basaltic andesite (aphyric to pyroxene–plagioclase–phyric flows)

Geology after A.H. Bailes and E.C. Syme, 1987

Figure 105-1: Geological setting of occurrences #105, 106, 107 and 108 (63K/13SE).

LOCATION: 106 NAME:

UTM: 6076171N 324859E AREA: Approximately 1.5 km east of Manistikwan Lake. AIRPHOTO: A26397-153

ACCESS:

Via boat on Manistikwan Lake.

EXPLORATION SUMMARY:

H.B.E.D. drilled a 112 m hole through a geophysical conductor on the Lit 140 claim in 1953.

GEOLOGICAL SETTING:

The area is underlain by mafic volcanic rocks (Fig. 105-1). Graphitic schist, chloritic schists, dacite, rhyolite breccia and silicified rhyolite were recorded in the drill log.

MINERALIZATION:

The drill hole intersected a 30 cm thick section of near solid pyrite and pyrrhotite with trace chalcopyrite and several sections of graphitic schists containing pyrite and/or pyrrhotite.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Sulphide stratum.

REFERENCES:

Assessment File 90438
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

LOCATION: 107 NAME:

UTM: 6075022N 324501E AREA: Approximately 1 km east of the northeast arm of Manistikwan Lake AIRPHOTO: A26397-152

ACCESS:

Via boat on Manistikwan Lake and walking east.

EXPLORATION SUMMARY:

H.B.E.D. completed a geophysical survey on the Lit claims in 1953. Four holes were drilled totalling 490 m on the Lit 25, 33 and 34 claims (Fig. 107-1).

GEOLOGICAL SETTING:

The area is underlain mainly by mafic to intermediate volcanic rocks (Fig. 105-1) that have been intruded by gabbroic and dioritic intrusions. In addition, chert breccia, rhyolite, dacite and graphitic schists were noted in drill cores.

MINERALIZATION:

In drill holes 10 and 15 intersections of near solid pyrrhotite-pyrite-minor chalcopyrite, were found throughout the drill cores in sheared, silicified dacite and graphite schists; the cherty breccia commonly contains disseminated sulphides. Drill hole 11 intersected a 30 cm thick layer of sheared dacite with near solid pyrite. In drill hole 12 there were several sections of graphitic schist with near solid sulphide.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Sulphide strata.

REFERENCES:

Assessment File 90438
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake Area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

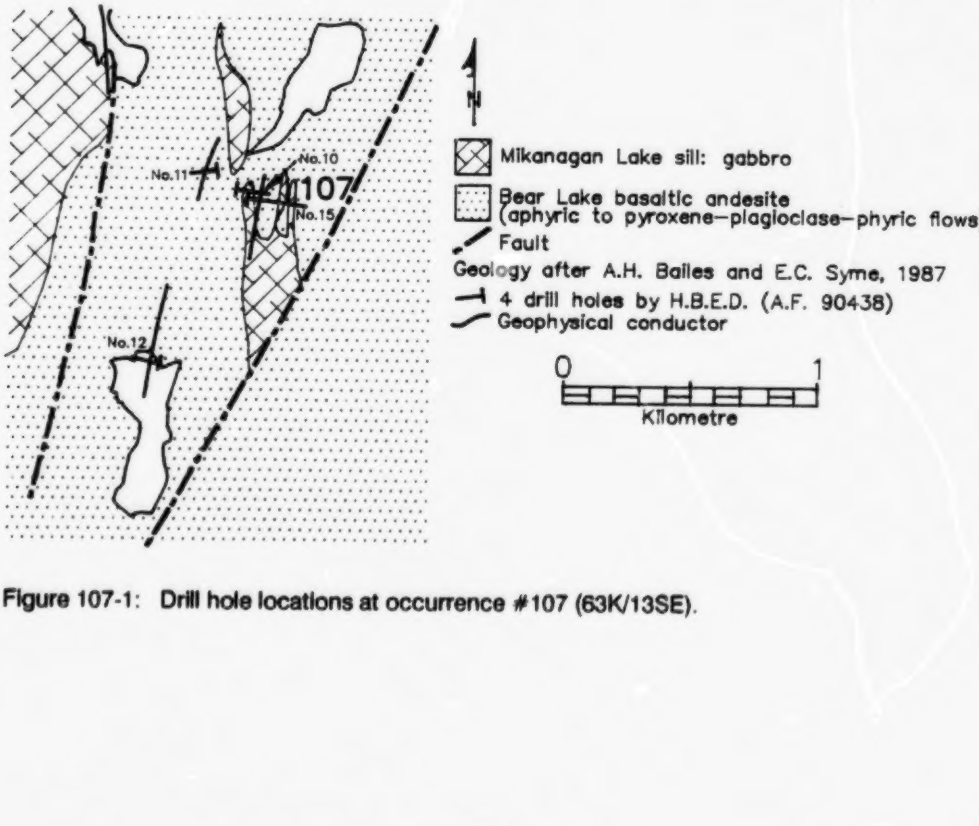

N
No.10
No.11
107
No.15
No.12
▨ Mikanagan Lake sill: gabbro
⬚ Bear Lake basaltic andesite (aphyric to pyroxene–plagioclase–phyric flows)
Fault
Geology after A.H. Bailes and E.C. Syme, 1987
4 drill holes by H.B.E.D. (A.F. 90438)
Geophysical conductor
0
1
Kilometre

Figure 107-1: Drill hole locations at occurrence #107 (63K/13SE).

LOCATION: 108 NAME:

UTM: 6075325N 232438E AREA: Northeast arm of Manistikwan Lake AIRPHOTO: A26397-152

ACCESS:

Via boat on Manistikwan Lake.

EXPLORATION SUMMARY:

H.B.E.D. drilled two holes, totalling 189 m, through conductors located on the Lit 32 property in 1953 (Fig. 105-1). In 1972, Straus Exploration Ltd. completed an airborne geophysical survey and drilled 330 m in two drill holes.

GEOLOGICAL SETTING:

The conductors are located adjacent to faults that mark the boundary between a fault block of intermediate to mafic volcanic rocks and an area of felsic volcanic rocks (Fig. 108-1).

MINERALIZATION:

The holes drilled by H.B.E.D. intersected 25 cm of near solid pyrite in graphitic schist and a number of sections of graphitic schist with minor pyrite. Hole No. 4, drilled by Straus Exploration Ltd. (Assessment File 90372) intersected several 30-60 cm layers of near solid pyrite and graphite within the felsic volcanic block. The brown mineral reported in the rhyodacite at the end of the hole could be phlogopite or amphibole.

GEOCHEMICAL DATA:

Two samples of the graphite schist with heavy pyrite mineralization and earthy pyrite stringers were analyzed by Straus Exploration Ltd. and contain only trace Au, Cu and Zn.

CLASSIFICATION:

Sulphide stratum

REFERENCES:

Assessment Files 90372, 90438
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake Area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

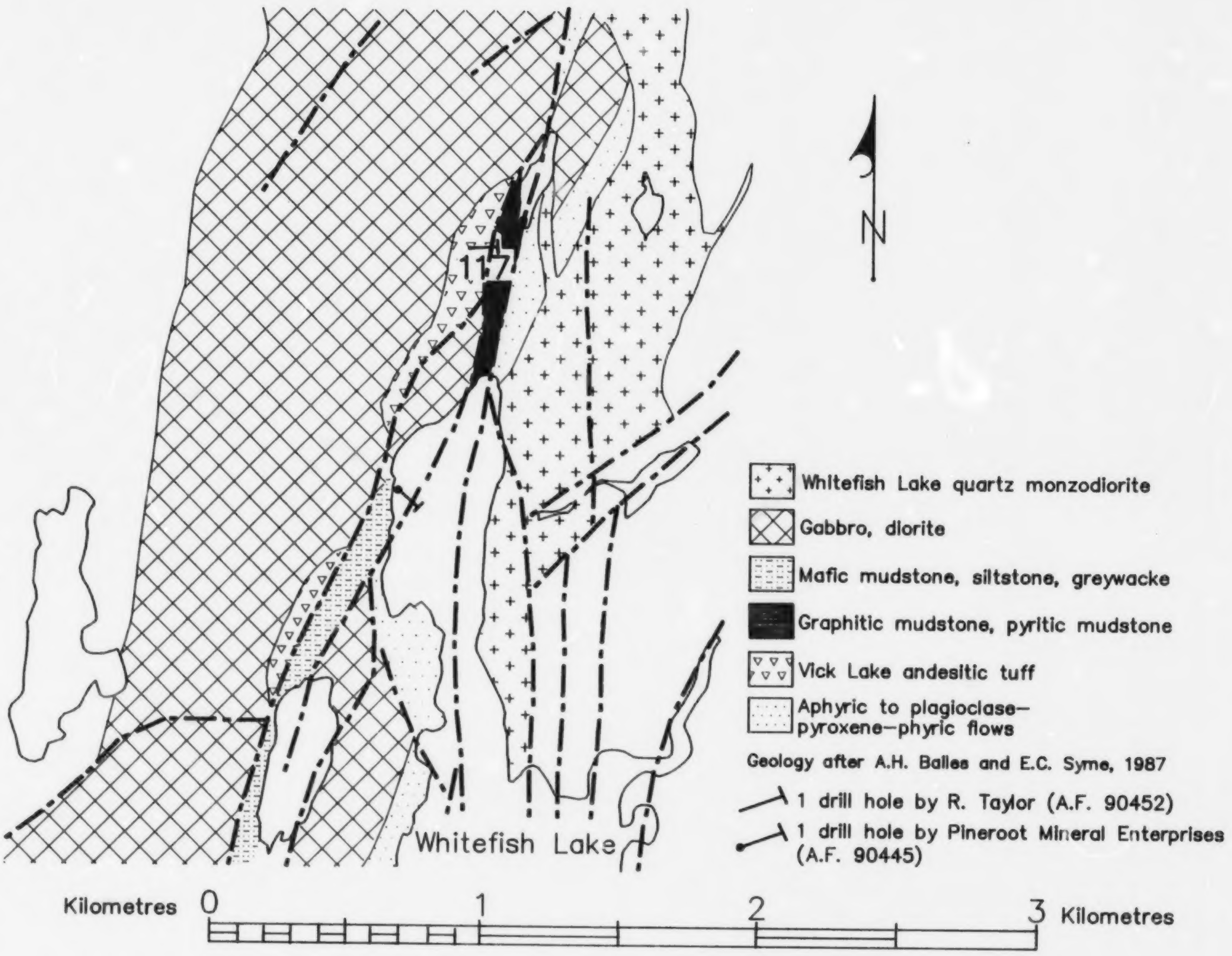

117
Whitefish Lake
N
Whitefish Lake quartz monzodiorite
Gabbro, diorite
Mafic mudstone, siltstone, greywacke
Graphitic mudstone, pyritic mudstone
Vick Lake andesitic tuff
Aphyric to plagioclase–pyroxene–phyric flows
Geology after A.H. Bailes and E.C. Syme, 1987
1 drill hole by R. Taylor (A.F. 90452)
1 drill hole by Pineroot Mineral Enterprises (A.F. 90445)
Kilometres
0
1
2
3
Kilometres

Figure 117-1: Geological setting of occurrence #117 (63K/13SE).

LOCATION: 117 NAME:

UTM: 6072547N 328548E AREA: Northwest tip of Whitefish Lake. AIRPHOTO: A26328-201

ACCESS:

Via North Star Road and boat on Whitefish Lake.

EXPLORATION SUMMARY:

R. Taylor drilled an 84 m hole on the Rat 6 property in 1951. Pineroot Mineral Enterprises drilled a 205 cm hole on an exceptionally strong conductor south of this locality in 1968.

GEOLOGICAL SETTING:

Dark green, chloritic andesite occurs adjacent to the contact of the Whitefish Lake intrusion.

MINERALIZATION:

Sulphides occur in strongly sheared chloritic andesite and white to grey quartz veins. R. Taylor reported 7.5 m of solid pyrite and 4 m of greenstone that was well mineralized with pyrite. Pineroot Mineral Enterprises reported only disseminated pyrite and suggested that the E.M. response was probably caused by ionized sheared volcanic rocks in a fault zone.

GEOCHEMICAL DATA:

None

CLASSIFICATION:

Not certain, sulphide strata.

REFERENCES:

Assessment Files: 90445, 90452
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake Area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

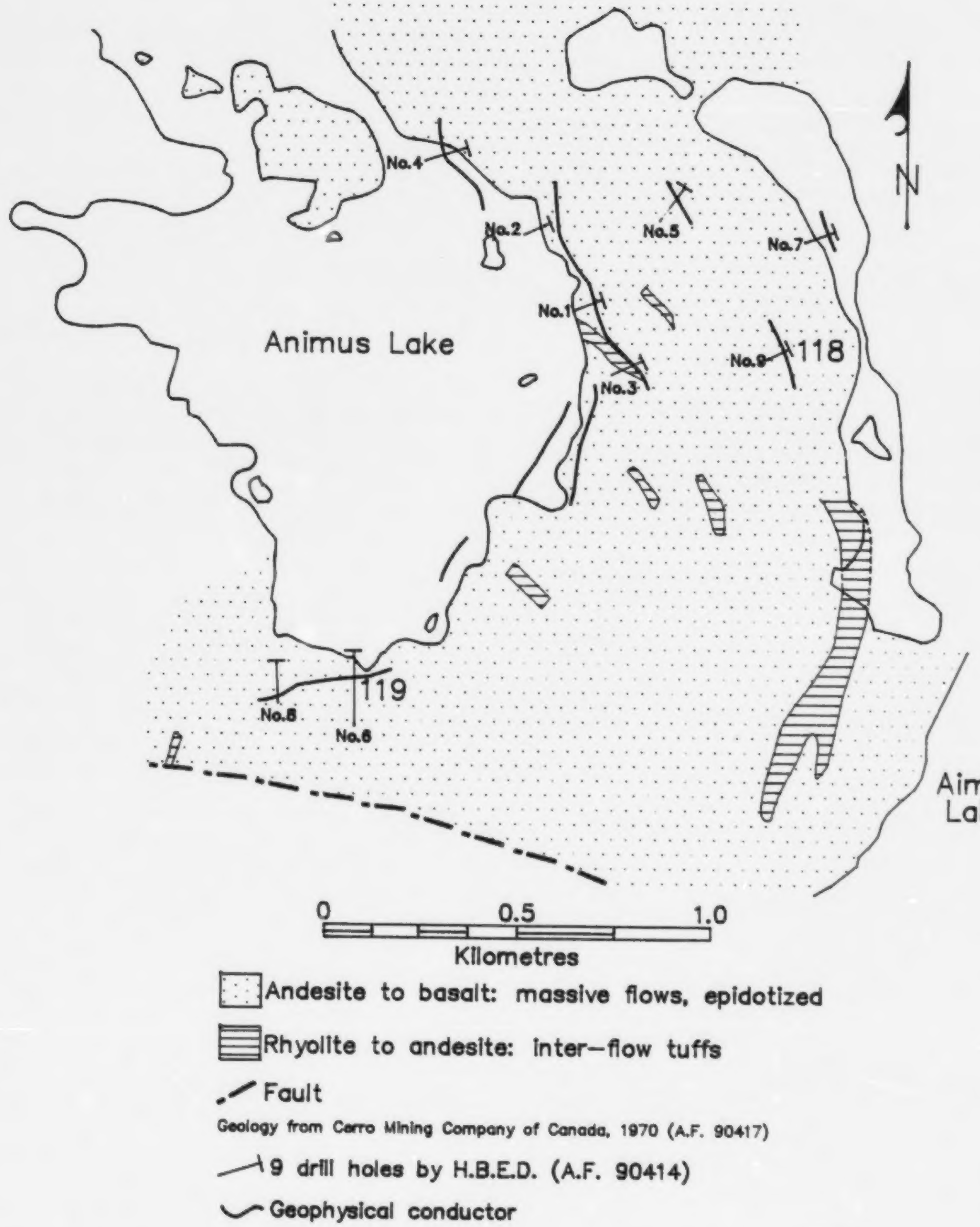

N
Animus Lake
Aimée Lake
No.1
No.2
No.3
No.4
No.5
No.6
No.7
No.8
No.9
118
119
0
0.5
1.0
Kilometres
Andesite to basalt: massive flows, epidotized
Rhyolite to andesite: inter–flow tuffs
Fault
Geology from Cerro Mining Company of Canada, 1970 (A.F. 90417)
9 drill holes by H.B.E.D. (A.F. 90414)
Geophysical conductor

Figure 118-1: Geological setting of occurrence #118 (63K/13SE).

LOCATION: 118 NAME:

UTM: 6081649N 332799E AREA: East side of Animus Lake. AIRPHOTOS: A26328-20, 22, 166

ACCESS:

Via plane from Flin Flon, or via Kississing Lake road and Lac Aimee road.

EXPLORATION SUMMARY:

H.B.E.D. drilled nine holes totalling 1018 m on the Cub claim group in 1954. A.L. Parres completed a H.L.E.M. survey in 1968.

GEOLOGICAL SETTING:

Massive mafic to intermediate flows, epidotized in parts, are the dominant rock types in the area. Dacitic and rhyolitic rocks, together with graphitic schists, were intersected in the drill cores.

MINERALIZATION:

H.B.E.D. drill logs record well mineralized to near solid sulphide (pyrite and pyrrhotite) in graphitic schists. Hole 9 intersected near solid to solid pyrite over 2 m. The dacitic and rhyolitic rocks contain abundant disseminated pyrite and/or pyrrhotite.

GEOCHEMICAL DATA:

None

CLASSIFICATION:

Sulphide stratum.

REFERENCES:

Assessment Files 90414, 90417, 91944
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

LOCATION: 119 NAME:

UTM: 6080475N 331873E AREA: South Animus Lake AIRPHOTOS: A26328-20, 22, 166

ACCESS:

Via plane from Flin Flon, or via Kississing Lake road and Lac Aimee Road and boat to Lac Aimee.

EXPLORATION SUMMARY:

H.B.E.D. drilled two holes, totalling 244 m on Cub 13 in 1954 (Fig. 118-1).

GEOLOGICAL SETTING:

Underlain mainly by mafic volcanic rocks that have been intruded by dioritic dykes.

MINERALIZATION:

120 cm of near solid to solid pyrite occurs in graphite schists. Other intersections include a 120 m zone of well mineralized pyrrhotite, and 11 m of "quartz graphite schist well mineralized with pyrite".

GEOCHEMICAL DATA:

None

CLASSIFICATION:

Sulphide stratum.

REFERENCES:

Assessment File 90414, 90417, 91944
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A; one inch to one mile; Geological Survey of Canada, Ottawa.

LOCATION: 120 NAME:

UTM: 6079254N 331408E AREA: Northeast corner of Mikanagan Lake AIRPHOTO: A26328-167

ACCESS:

Via Kississing Lake Road, Lac Aimee Road and boat.

EXPLORATION SUMMARY:

Three conductors drilled by Cyprus Exploration Corporation.

GEOLOGICAL SETTING:

Underlain by mafic volcanic rocks that have been intruded by diorite. Drill logs record a number of intersections of dacite and graphite schist.

MINERALIZATION:

Narrow layers of pyrite and pyrrhotite in graphitic schists, trace chalcopyrite.

GEOCHEMICAL DATA:

None

CLASSIFICATION:

Sulphide stratum.

REFERENCES:

Assessment File 90442
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A; one inch to one mile; Geological Survey of Canada, Ottawa.

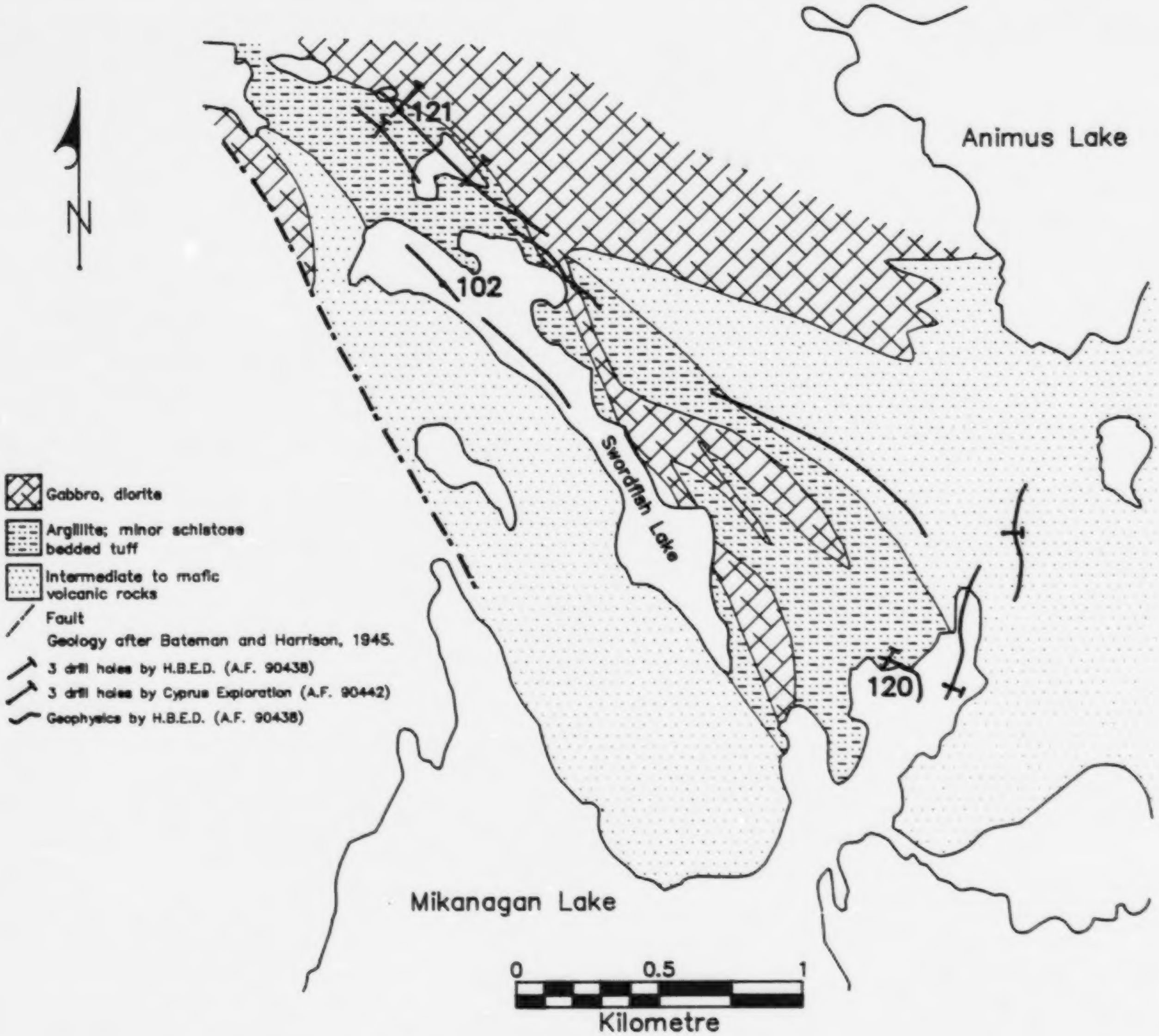

Animus Lake
121
102
Swordfish Lake
120
Mikanagan Lake
N
0
0.5
1
Kilometre
Gabbro, diorite
Argillite; minor schistose bedded tuff
Intermediate to mafic volcanic rocks
Fault
Geology after Bateman and Harrison, 1945.
3 drill holes by H.B.E.D. (A.F. 90438)
3 drill holes by Cyprus Exploration (A.F. 90442)
Geophysics by H.B.E.D. (A.F. 90438)

Figure 120-1: Geological setting of occurrences 120 and 121 (63K/13SE).

LOCATION: 121 NAME:

UTM: 6081638N 329766E AREA: Northwest of Swordfish Lake AIRPHOTO: A26328-167

ACCESS:

Via plane from Flin Flon or via Kississing Lake Road, Lac Aimee Road and boat on Lac Aimee.

EXPLORATION SUMMARY:

Three holes drilled on E.M. anomalies by H.B.E.D. in 1953 (Fig. 120-1).

GEOLOGICAL SETTING:

Mafic volcanic rocks intruded by the Tartan Lake mafic intrusion.

MINERALIZATION:

Several intersections of graphitic schists with pyrite and pyrrhotite; quartz and carbonate with pyrite and pyrrhotite are common in the holes close to the intrusion; one hole contains 2 m of quartz.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Sulphide stratum, and veins in shear zone(?).

REFERENCES:

Assessment File 90438
Manitoba Energy and Mines, Minerals Division.

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A; one inch to one mile; Geological Survey of Canada, Ottawa.

LOCATION: 122 NAME:

UTM: 6070000N 338140E AREA: About 200 m south of Jenny Lake AIRPHOTO: A26398-95

ACCESS:

Via Kississing Lake Road

EXPLORATION SUMMARY:

Gold occurrence indicated on the 1 inch to 1 mile geological map (Bateman and Harrison, 1945). The area was staked as the P.A.W. 1-7 claims in 1939 (Holloway, 1939). Drilling was done in the area by H.B.E.D. in 1949 (A.F. 90443). The occurrence has recently been partly covered by road construction.

GEOLOGICAL SETTING:

The area is shown as underlain by volcanic rocks (Bateman and Harrison, 1945); during road building the area was found to be underlain mainly by granitic rocks. The original trenches may have been dug in volcanic rocks at the margin of the granite. A regional fault zone has been delineated a short distance south of the occurrence (Bateman and Harrison, 1945). (See also 63K/13SE #22).

MINERALIZATION:

Rubble at the edges of the Kississing Road indicates that the occurrence consisted of quartz veins with minor pyrite, chalcopyrite and galena. Holloway (1939) noted the abundance of irregular quartz veins with local concentrations of sulphides and free gold. A small gabbro body near this occurrence contains pyrite. Several other occurrences of sulphide mineralization in the area were recorded by Holloway (1939).

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Quartz veins in tension fractures.

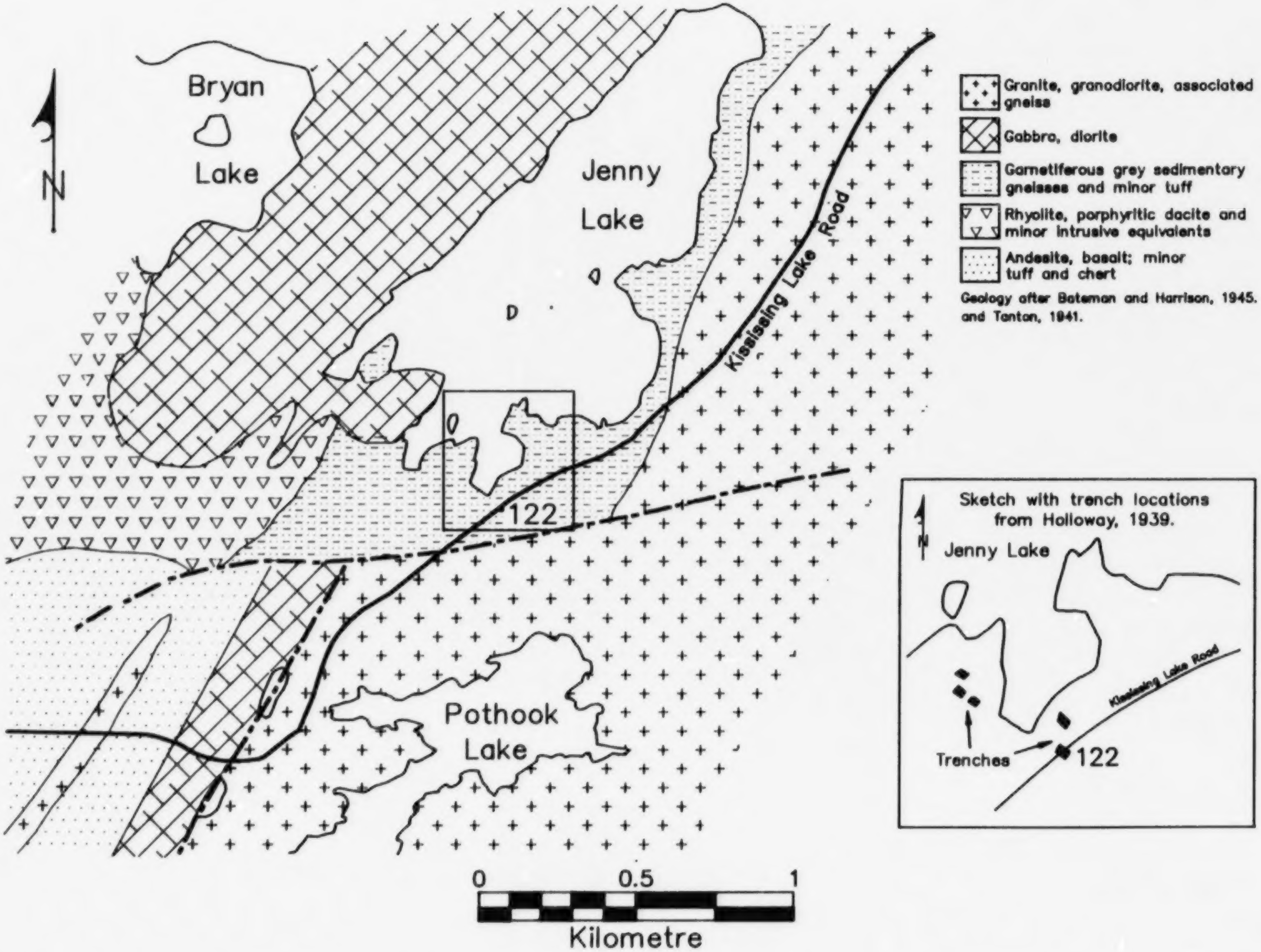
REFERENCES:

Bateman J.D., and Harrison, J.M.

1945: Mikanagan Lake, Map 832A, 1 inch equals 1 mile; Geological Survey of Canada, Ottawa.

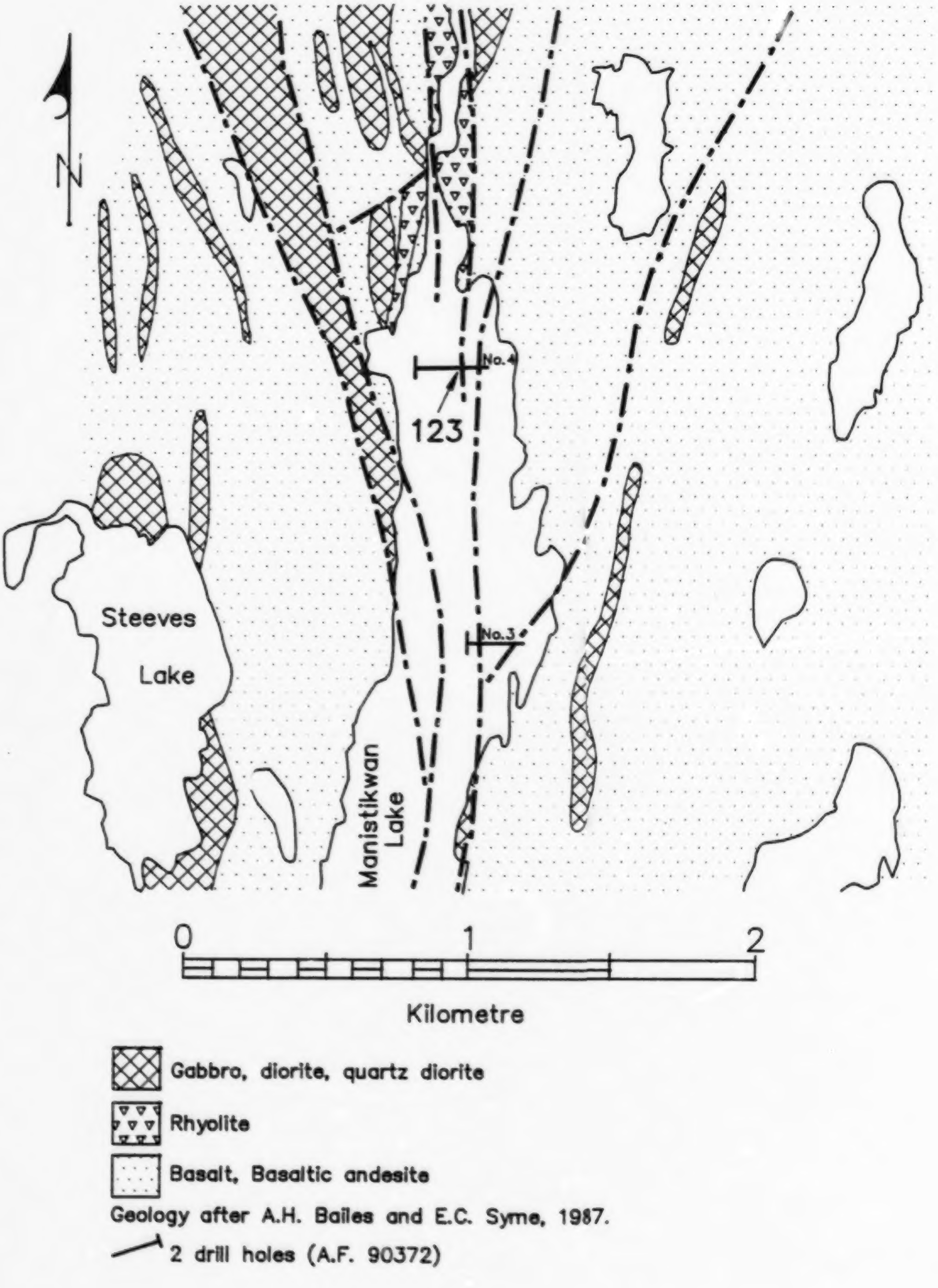
Holloway, J.M.

1939: Note on visit to Jenny Lake (unpublished); Manitoba Energy and Mines, Minerals Division.



Bryan Lake
Jenny Lake
Pothook Lake
Kississing Lake Road
122
N
Granite, granodiorite, associated gneiss
Gabbro, diorite
Garnetiferous grey sedimentary gneisses and minor tuff
Rhyolite, porphyritic dacite and minor intrusive equivalents
Andesite, basalt; minor tuff and chert
Geology after Bateman and Harrison, 1945. and Tanton, 1941.
Sketch with trench locations from Holloway, 1939.
Jenny Lake
Kississing Lake Road
Trenches
122
0
0.5
1
Kilometre

Figure 122-1: Geology, and trench locations at occurrence #122 (63K/13SE).


N
123
No.4
No.3
Steeves Lake
Manistikwan Lake
0
1
2
Kilometre
Gabbro, diorite, quartz diorite
Rhyolite
Basalt, Basaltic andesite
2 drill holes (A.F. 90372)

Geology after A.H. Bailes and E.C. Syme, 1987.

Figure 123-1: Geological setting of occurrence #123 (63K/13SE).

LOCATION: 123 NAME:

UTM: 6073490N/323216E AREA: East Arm of Manistikwan Lake AIRPHOTO: A26397-152

ACCESS:

East Arm of Manistikwan Lake

EXPLORATION SUMMARY:

H.L.E.M. survey and drilling (329 m) conductors by Stau Exploration, Inc. in 1972.

GEOLOGICAL SETTING:

The area is underlain by intermediate flows and subaqueous silicic volcanic rocks (Fig. 123-1). Major faults that pass through the area (Bailes and Syme, 1987) were intersected in both drill holes.

MINERALIZATION:

Two units of pyritic mudstone approximately 100 m thick contain a number of layers of solid pyrite and graphite that are up to 60 cm thick.

GEOCHEMICAL DATA:

Two assays (Assessment File 90372) containing trace amounts of Au, Cu and Zn.

CLASSIFICATION:

Sulphide strata.

REFERENCES:

Assessment File 90372
Manitoba Energy and Mines, Minerals Division.

Bailes A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

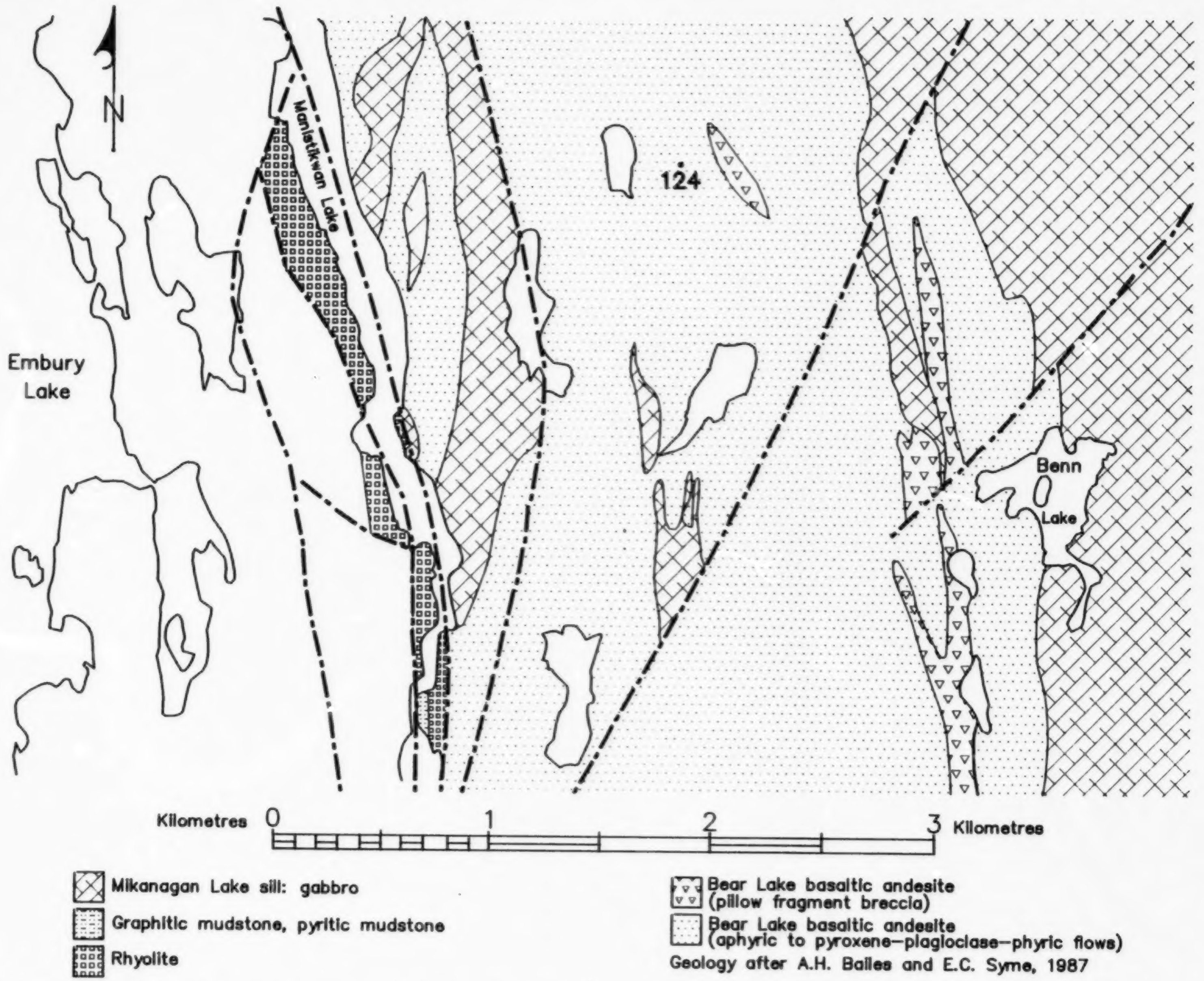

Embury Lake
N
Manistikwan Lake
124
Benn Lake
Kilometres 0 1 2 3 Kilometres
Mikanagan Lake sill: gabbro
Graphitic mudstone, pyritic mudstone
Rhyolite
Bear Lake basaltic andesite (pillow fragment breccia)
Bear Lake basaltic andesite (aphyric to pyroxene–plagioclase–phyric flows)
Geology after A.H. Bailes and E.C. Syme, 1987

Figure 124-1: Geological setting of occurrence #124 (63K/13SE).

LOCATION: 124 NAME:

UTM: 6076576N 324418E AREA: Approximately 1.4 km east of Manistikwan Lake AIRPHOTO: A26397-153

ACCESS:

Via boat on Manistikwan Lake

EXPLORATION SUMMARY:

H.B.E.D. completed a geophysical survey (HLEM) on the Lit claims in 1953. Westfield Minerals and Goldbrae Developments initiated a drill program to test geochemical soil anomalies in 1987.

GEOLOGICAL SETTING:

The area is underlain by mafic to intermediate flow rocks (Bailes and Syme, 1987). H.B.E.D. drill holes in the vicinity of the occurrence indicate the presence of abundant altered felsic and dacitic rocks (see #50 and #106 - 63K/13 SE).

MINERALIZATION:

Trenches dug by Westfield Minerals and Goldbrae Developments exposed a 6 to 13 m wide gossan zone.

GEOCHEMICAL DATA:

"The best results came from hole 13 which cut 40.67 feet grading 0.17 oz. gold per ton, 2.73 oz. silver, 0.58% copper and 22.44% zinc. Within the same section was 29.19 feet grading 0.21 oz. gold, 3.42 oz. silver, 0.78% copper and 23.4% zinc, Westfield, the project operator says. The highest grading gold values came from hole 1 which cut 1.5 feet grading 1.5 oz. gold, 5.78 oz. silver, 1.29% copper and 6.34% zinc." (The Northern Miner, November 23, 1987, p. 3). Grab samples from trenches in the gossan zone assayed 0.27 oz. gold across 4 m (The Northern Miner, 1987).

CLASSIFICATION:

A volcanogenic massive sulphide deposit.

REFERENCES:

Assessment File 90438

Manitoba Energy and Mines, Minerals Division.

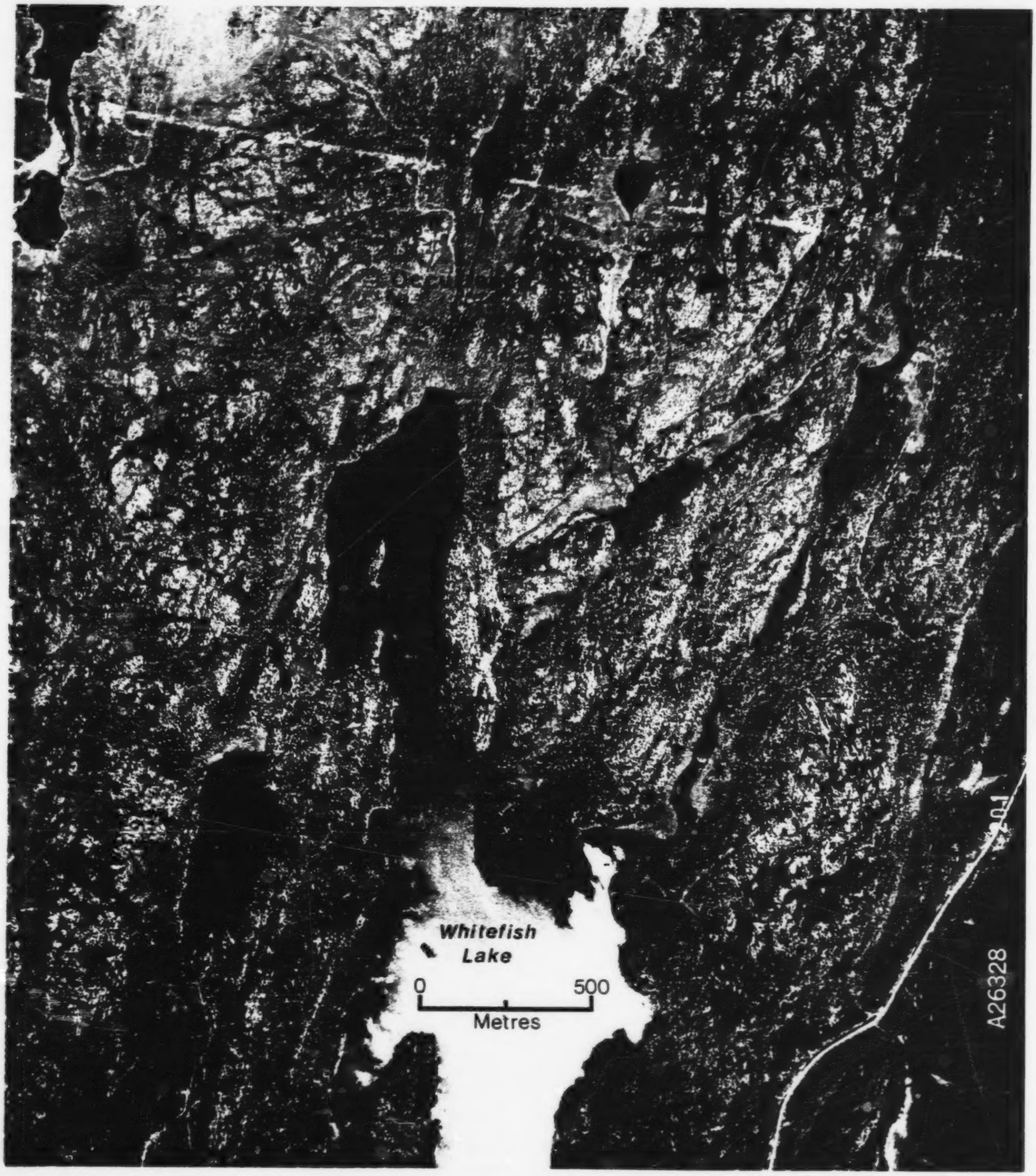
Bailes, A.H. and Syme, E.C.

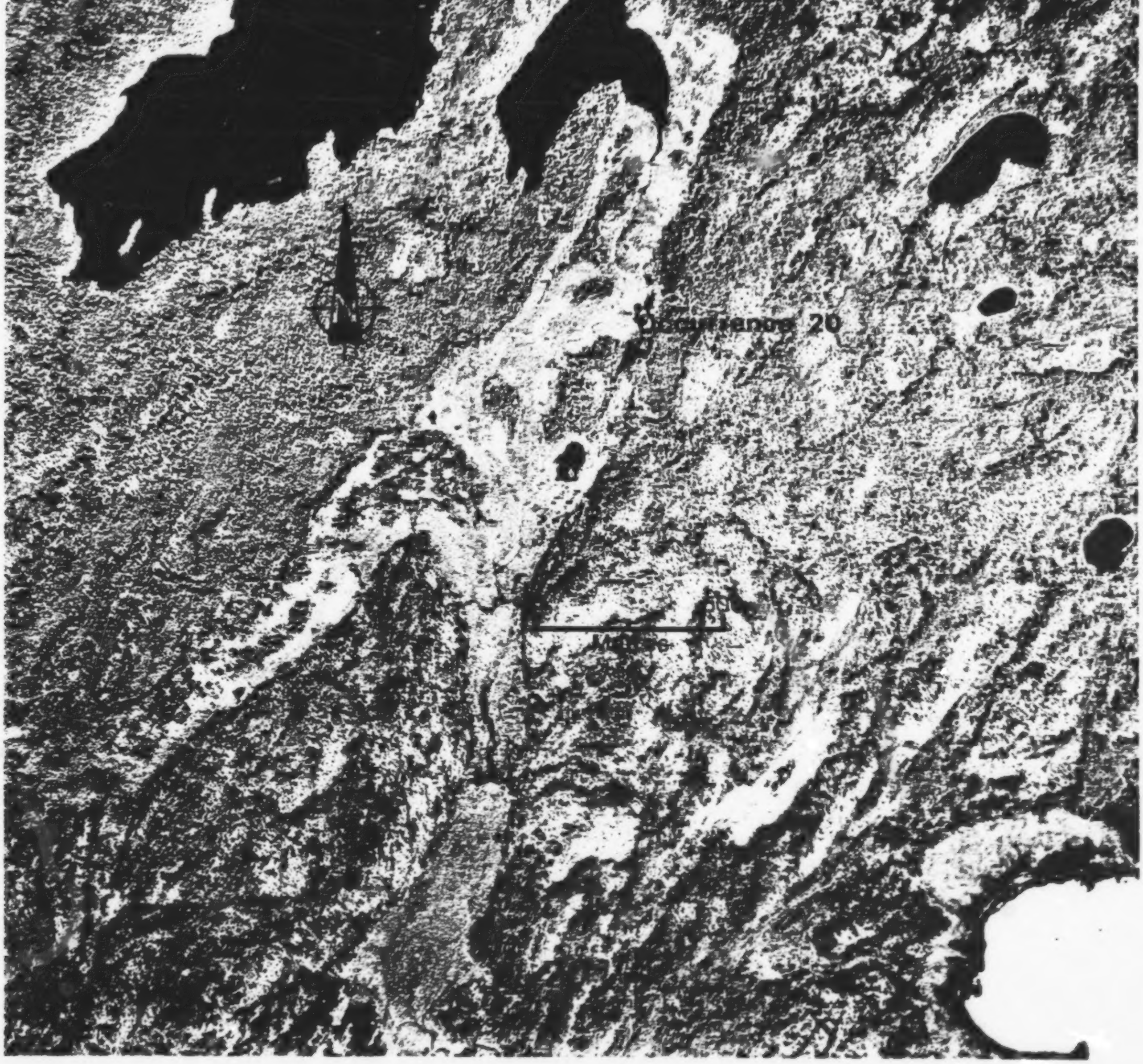
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

The Northern Miner

1987: Volume 73, Number 37, November 23, 1987.

APPENDIX A
AIRPHOTO LOCATION OF OCCURRENCES (LOCATIONS 8 AND 20)


Whitefish
Lake
0
500
Metres
A26328
201


20

MAPS
NOT
FILMED

CARTES
OMISES